

HELMINTHOLOGICAL ABSTRACTS

incorporating
BIBLIOGRAPHY OF HELMINTHOLOGY
For the Year 1946.



IMPERIAL BUREAU OF AGRICULTURAL PARASITOLOGY
(HELMINTHOLOGY)

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IMPERIAL BUREAU OF AGRICULTURAL PARASITOLOGY (HELMINTHOLOGY)

Director - - R. T. Leiper, C.M.G., M.D., D.Sc., F.R.C.P.,
F.R.S.

Technical Assistants Miss A. Walton, Miss B. Birdsey.

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Abstracts in the present number are by :

J. J. C. Buckley	T. Goodey
Phyllis A. Clapham	J. W. G. Leiper
S. G. Cowper	R. T. Leiper
D. W. Fenwick	B. G. Peters
Mary T. Franklin	Nora G. Sproston
	May R. Young

HELMINTHOLOGICAL ABSTRACTS

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FOR THE YEAR 1946.

Vol. XV, Part 3.

68—Acta Tropica. Basel.

- a. SEITZ, E., 1946.—“Intensive Kurzbehandlung von Schistosomiasis (Bilharzia) mit Antimon-salzen.” 3 (2), 155–157.

(68a) Seitz corroborates the work of Alves & Blair [see Helm. Abs., Vol. XV, No. 40a] as to the efficacy and safety of their intensive treatment of schistosomiasis. Of the 322 patients so treated by Seitz none showed pyrexia, vomiting, tachycardia or cardiac irregularity. The patients were kept on a light diet and sent home by car on the afternoon of the second day. Haematuria and ova disappeared in 10 days. Eosinophilia fell to 3% and all symptoms subsided. Of 307 cases 4 only after 4 weeks and 3 out of 216 after 8 weeks were still positive. The course of treatment was subsequently still further reduced to 6 injections. On the first day 110 mg., 120 mg. and 130 mg. were given at 9 a.m., 12 noon and 3 p.m., and on the second day the dosage was 130 mg., 120 mg. and 110 mg. at 9 a.m., 12 noon and 3 p.m. This was estimated on the basis of 12 mg. of sodium antimonyl tartrate per Kg. body weight. The antimony salt used was powdered and sterilized daily in 5% solution. The required dose in mg. was drawn into a syringe, made up to 10 c.c. with 5% physiological glucose-saline and injected slowly, in 5 to 6 minutes, intravenously. R.T.L.

69—Agricultural Gazette of New South Wales.

- a. REID, B. L., 1946.—“Phenothiazine in the treatment of worm infestation in domestic animals.” 57 (7), 377–381.
b. ANON, 1946.—“Eelworm disease of potatoes.” 57 (10), 539–541.

(69a) In this popular article on treatment with phenothiazine of helminths of farm animals particular attention is paid to methods of preventing the wool being stained during drenching. J.W.G.L.

(69b) Useful notes on the symptoms, mode of spread and control of *Heterodera marioni* in potatoes are supplied, and readers are referred to Plant Diseases Leaflets Nos. 38 and 103 issued by the Division of Information and Extension Services of the Department of Agriculture, New South Wales. R.T.L.

70—Agricultural Journal. Department of Agriculture, Fiji.

- a. SANDERS, R. N., 1946.—“Phenothiazine—a drug for internal parasites in all types of live-stock.” 17 (2), 40–41.

71—American Journal of Clinical Pathology.

- a. HESSELBROCK, W. B., LIPPINCOTT, S. W. & PALMER, E. D., 1946.—“Large-scale routine examinations of stool for parasites. Practical experience in a general hospital in the zone of the interior.” 16 (4), 264–269.
b. GEIB, W. A., SHER, M. F. & CHENEY, G., 1946.—“Diagnosis of Manson’s schistosomiasis by biopsy of rectal tissue.” 16 (4), 270–276.

(71a) Large scale routine faecal examinations over a period of 6 months in a U.S. Army general hospital showed that the zinc-sulphate centrifugal flotation technique was much superior to other methods, but this technique as modified by Otto, Hewitt & Strahan, 1941 [see Helm. Abs., Vol. X, No. 2c] is not so efficient as the original time-consuming procedure. The usual routine tests failed to detect half of the demonstrable infections. The infections with pathogenic intestinal parasites were approximately twice as great in men from the Pacific area as in those from the European and Mediterranean war theatres. Although hookworm was the commonest infection no clinical case of hookworm disease was seen. R.T.L.

(71b) From a study of 56 biopsies of rectal mucosa from cases of *Schistosomiasis mansoni* the authors confirm that the microscopical examination of excised tissue after digestion by an alkali is a simple, harmless and exceedingly valuable aid to diagnosis where repeated stool examinations have proved negative in suspected cases. R.T.L.

72—American Journal of the Medical Sciences.

- a. BEHM, A. W. & HAYMAN, JR., J. M., 1946.—“The course of filariasis after removal from an endemic area.” 211 (4), 385–394.
- b. ROGERS, A. M. & DAMMIN, G. J., 1946.—“Hookworm infection in American troops in Assam and Burma.” 211 (5), 531–538.
- c. WEBER, H. M., 1946.—“Roentgenologic changes observed in tropical diseases.” 211 (5), 629–636.

(72a) A clinical diagnosis of filariasis was made in 36·8% of 532 men who had spent a year in one of the Pacific Islands where filariasis was highly endemic. Only in 2 cases were microfilariae positively diagnosed. The recurrence of symptoms, which were precipitated by exertion, diminished with the passage of time and had disappeared in men who had left the endemic areas 20 months previously. The authors consider the skin test helpful but that eosinophilia or other laboratory techniques are valueless. The prompt return to duty after a few days rest during acute exacerbations is the proper treatment in these cases. R.T.L.

(72b) The prevalence of moderately severe gastro-intestinal symptoms of acute onset, with a high eosinophilia, in troops in North Burma was associated with early hookworm infection due, chiefly, to *Ancylostoma duodenale*. Initial stool examinations were positive only in 20% of the cases. R.T.L.

(72c) Among the principal tropical diseases which manifest demonstrable lesions roentgenologically are *Paragonimus westermani* and echinococcosis. R.T.L.

73—American Journal of Tropical Medicine.

- a. FISHBON, H. M., 1946.—“A case in which eggs of *Schistosoma japonicum* were demonstrated in multiple skin lesions.” 26 (3), 319–326.
- b. HERNÁNDEZ MORALES, F., OLIVER-GONZÁLEZ, J. & PRATT, C. K., 1946.—“The treatment of *Schistosomiasis mansoni* with urea stibamine (Squibb).” 26 (3), 327–329.
- c. SCOTT, J. A., 1946.—“Simplified quantitative methods for hookworm control programs.” 26 (3), 331–337.
- d. BERBERIAN, D. A., 1946.—“Treatment of *Hymenolepis nana* infection with “Acranil.”” 26 (3), 339–343.
- e. MCCOY, O. R., 1946.—“Precautions by the Army to prevent the introduction of tropical diseases.” 26 (3), 351–355.

(73a) Fishbon reports a case of *Schistosoma japonicum* in which there were a number of single, hard, shotty papules on the anterior abdominal wall and on the back in the region of the 8th intercostal space. Occasionally a papule had a minute purulent centre. That these lesions were due to eggs containing miracidia is demonstrated by a fine series of photographs. R.T.L.

(73b) Urea stibamine (Squibb) administered intravenously to 14 patients suffering from *Schistosomiasis mansoni*, in doses totalling from 3·40 to 10·125 gm., resulted in the disappearance of ova from the stools in 12 of the cases. One patient died as a result of the treatment and all the patients showed toxic reactions to the drug. R.T.L.

(73c) The procedure in the hookworm control programme of the Georgia Department of Public Health is described by the author, who uses it as an example illustrating the present day difficulties encountered in such schemes both as to the accuracy of the results obtained and in the presentation of the results in a sufficiently simplified form. He recommends and describes in detail a method of presenting egg-count data, using as an example the results obtained from the examination of 824 persons in South Georgia. The data are listed for each of 3 population age groups, viz., 0 to 4, 5 to 19, and over 20, in the following categories: number of persons examined, percentage positive by flotation examination, percentage positive by egg-count examination with 200 eggs or more per c.c., and percentage positive with 2,500 eggs or more per c.c. J.J.C.B.

(73d) 20 out of 25 cases of *Hymenolepis nana* infection treated with "Acranil", which is closely related to "Atabrin", remained free from worms for 14 days. The drug is considered to be the most effective and least toxic of the anthelmintics hitherto used for this infection. R.T.L.

(73e) As up to 25% of some combat units of the U.S. Army acquired infection with *Ancylostoma duodenale* while stationed in the Solomon Islands, New Guinea, the Philippines and Burma there is a danger of its introduction into the United States. The absence of a suitable intermediate host for *Schistosoma japonicum* inhibits its spread there although more than 1,000 cases occurred during the invasion of Leyte. Several thousand infections with filariasis occurred in U.S. Army personnel in the Pacific, but the absence of microfilariae in the blood, except in rare cases, renders it unlikely that these will give rise to a public health problem. R.T.L.

74—American Journal of Veterinary Research.

a. KEMPER, H. E. & ROBERTS, I. H., 1946.—"Treatment of filarial dermatosis of sheep with antimony compounds." 7 (24), 350-354.

b. OLSEN, O. W., 1946.—"Hexachlorethane-bentonite suspension for the removal of the common liver fluke, *Fasciola hepatica*, from sheep." 7 (24), 358-364.

(74a) Filarial dermatosis in sheep due to the microfilariae of *Elaeophora schneideri*, first recorded in New Mexico in 1933, is now widespread in the western and southern areas of U.S.A. Kemper & Roberts have found that both anthiomaline and Fouadin give promising results in single large doses but recommend tartar emetic in glucose as an efficient and inexpensive preparation. Eight weekly injections of tartar emetic (0.3 gm., 4 c.c. of 50% glucose with aqua dest. ad 30 c.c.) produced complete healing in 30 days when given either intravenously or intramuscularly. Neither adults nor microfilariae were recovered at autopsy. R.T.L.

(74b) Hexachlorethane-bentonite suspension is well tolerated by sheep infected with fluke and is an effective fasciolicide. The mixture is an aqueous drench made by mixing 500 gm. of commercial hexachlorethane, ground to finer than 60-mesh size, 50 gm. of bentonite, $\frac{1}{4}$ to $\frac{1}{2}$ teaspoonful of white flour and 750 c.c. of tap water. This results in 1,000 c.c. of suspension containing one part of hexachlorethane by weight to 2 parts of the mixture by volume. Of 110 infected sheep given 30 c.c. of the suspension (15 gm. of hexachlorethane) 104 did not show eggs in the faeces after a single treatment. This dosage was well tolerated: a 60 c.c. dose was still more effective. Dosing in late autumn, when most of the flukes are mature, followed by treatment at intervals of 4 to 6 months has proved highly effective in stopping losses in Texas. R.T.L.

75—American Midland Naturalist.

a. RANKIN, JR., J. S., 1946.—"Helminth parasites of birds and mammals in western Massachusetts." 35 (3), 756-768.

(75a) Rankin records the presence of 40 species of helminths from 9 avian and 14 mammalian species in Massachusetts. No new species are described but more than half are new distributional records. Short pathological notes are appended in some cases. P.A.C.

76—Annales de Parasitologie Humaine et Comparée.

a. DOLLFUS, R. P., 1946.—"Sur trois espèces de distomes, dont une à 17 ventouses (*Einenterum* (*Jeancadenatia*) *brumpti* n.sp.), parasites du poisson marin *Kyphosus sectatrix* (L.)." 21 (3/4), 119-128.

b. GOLDSTEIN, A. C., 1946.—"Dépistage rapide de la bilharziose en milieu indigène aux colonies par l'intradermo-réaction à *Schistosoma bovis*." 21 (3/4), 129-137.

c. DESPORTES, C., 1946.—"Des filaires dans le tube digestif." 21 (3/4), 138-141.

d. VAN CLEAVE, H. J., 1946.—"Remarques sur le genre *Moniliformis* (acanthocéphales) et particulièrement sur les espèces parasites des rats." 21 (3/4), 142-147.

e. TRAWINSKI, A., 1946.—"La sérologie au service de la parasitologie." 21 (3/4), 183-198.

f. CALLOT, J., 1946.—"Matériaux pour servir à la faune des distomes de France." 21 (3/4), 199-201.

g. DOLLFUS, R. P., 1946.—"A propos de l'infestation expérimentale du lapin domestique par *Brachylaemus*: une question de priorité." 21 (3/4), 203-204.

h. DOLLFUS, R. P., 1946.—"Amoenitates helminthologicae. V." 21 (3/4), 204-205.

(76a) In a collection of some 50 distomes from the intestine of *Kyphosus sectatrix* from Dakar, Dollfus found 3 species differing sufficiently to be placed in 3 new subgenera which are

united under the uncertain genus *Enenterum* Linton, 1910. *Enenterum* (E.) *pseudaureum* n.sp. is distinguished from the genotype by a long prepharynx and a spiny cuticle; *E. (Cadenatella) cadenati* n.sp. has only 8 pre-oral lobes, a single testis and a small pre-acetabular accessory sucker. *E. (Jeancadenatia) brumpti* n.sp. is over 20 times as long as wide and, like the genotype, has 10 pre-oral lobes and 2 tandem testes, but the prepharynx is exceptionally long, and the outstanding character is the median row of 15 accessory suckers between the acetabulum and the pharynx. N.G.S.

(76b) An annual inflow of workers from the Sudan to the region of Maçina, many being carriers of *Schistosoma*, provided a problem for rapid diagnosis of the disease, as suitable snail vectors are indigenous to the district. However, an antigen made from *S. bovis* gave excellent results when used for the intradermal test: of subjects known to be carriers all gave positive results while non-carriers, even those who harboured hookworm, gave negative reactions. At a temperature of 38 to 38.5° C., a result was often seen as quickly as 2 hours after injection: it disappeared quickly too. It was associated with induration and infiltration of the dermis at the site of injection and with local inflammation. P.A.C.

(76c) A dozen living specimens of *Litomosa filaria* have been observed in the lumen of the small intestine of *Myotis myotis*. This confirms an early record by van Beneden of the same species occurring in the stomach of *Plecotus auritus* and upon the accuracy of which later authors have cast considerable doubt. R.T.L.

(76d) Van Cleave is of the opinion that many of the records of *Moniliformis moniliformis* should be *M. dubius*, and that *M. travassosi* is a synonym of *M. dubius*. *M. clarki* is probably a distinct species though *M. spiradentatis* is probably another synonym of *M. dubius*. P.A.C.

(76e) Trawinski gives a practical review of some of the serological techniques used for the diagnosis of parasitic diseases. He describes methods of preparing antigens from *Trichinella spiralis*, *Echinococcus granulosus*, *Fasciola hepatica*, *Dicrocoelium dendriticum*, *Parascaris equorum*, *Strongylus equinus* and *Cysticercus cellulosae* and *C. tenuicollis*. He considers the technique of the precipitation test and mentions the action of X-rays on parasite precipitins. P.A.C.

(76f) Callot gives short notes and measurements of the following distomes he has collected in various parts of France: *Lepoderma maculosum* (Rud.) from *Apus apus* and *Hirundo urbica*; *Phaneropolis micrococcus* (Rud.), *Platynosomum clathratum* (Desl.) and *Lyperosoma olssoni* (Railliet), also from the swift; *L. attenuatum* (Duj.) from *Turdus merula*; *Brachycoelium salamandrae* (Froelich) from *Molge alpestris* and *Anguis fragilis*; *Euryhelmis squamula* (Rud.) from *Putorius putorius*—which also harboured *Trogloremia acutum* (Leuckart), and a species of the nematode genus *Skrjabingylus*. *Renicola* sp. was found in *Sterna cantiaca*, and an immature *Sphaerostoma braelae* in *Leuciscus rutilus*. N.G.S.

(76g) Dollfus examines the evidence against Pavlov's claim to priority in obtaining adult *Brachylaemus* sp. by feeding metacercariae to rabbits [see Helm. Abs., Vol. XV, No. 7b], and draws attention to the similar findings of Balozet (1937) in Tunis. That mice were among the receptive hosts in Tunis, but not in Tirnovo, is countered by the experience of Krull (1934) working on *B. virginianus*, for which chickens were only sometimes receptive hosts. Characters usually taken as specific are highly variable in this genus, but some reliance may be placed in the oral sucker being consistently smaller than the acetabulum, a factor which may help to decide the conspecificity of the Bulgarian and Tunisian material—since at present, the natural definitive host is unknown. N.G.S.

(76h) In reviewing the opinions of some recent authors on the systematics of the trematodes from *Gavia immer*, named by Linton *Haematotrephus fodiens*, Dollfus disagrees with Skrjabin who, like other authors, recognizes that Linton described 2 unrelated species under the same name, and for the cystic form from the pancreas he erects the genus *Eschoviorchis* [*Erschoviorchis*], with *E. lintoni* (Gower) as type, leaving the intestinal form in its original genus. Dollfus upholds the views of Ejsmont (1931) and Gower (1939) that the intestinal form should be designated *Diasia fodiens* (Linton, 1928), and the cystic form *Amphimerus lintoni* Gower, 1939; but since the latter resembles *A. elongatus* Gower, 1938 in lacking the oral sucker,

Dollfus suggests that rather than relegate *Erschoviorchis* Skrjabin to full synonymy with *Amphimerus* Barker, it could be reduced to a subgenus to contain these 2 species lacking an oral sucker.

N.G.S.

77—Annales de la Société Belge de Médecine Tropicale.

- a. RADNA, R., 1946.—“Contribution au traitement de la bilharziose intestinale.” 26 (1/2), 87–88.

(77a) Histidine has given good results in 5 out of 6 cases of post-bilharzial ulcerative rectitis. Complete cure required intramuscular injections for 24 to 36 days.

R.T.L.

78—Annals of Allergy.

- a. GRAÑA, A., 1946.—“Hydatid allergy.” 4 (3), 207–212.

(78a) Patients harbouring hydatid cysts give a positive allergic reaction when injected intracutaneously with cyst fluid. There is an early histamine-like reaction and a delayed action. The early action may be produced by patients suffering from a variety of other diseases but the delayed action occurs only when cysts are present. There may be a passive transfer by means of serum to normal individuals. Eosinophilia is usually present. Some patients carrying hydatid show 3 reactions from repeated injection of antigen—haematological increase of blood eosinophiles, heterophile serological reaction with increase of agglutinins and haemolysins against sheep cells and a rapid appearance of specific complement fixation antibodies. Typical crises of asthma have been observed in hydatid patients.

P.A.C.

79—Annals of Applied Biology.

- a. WRIGHT, D. W. & ASHBY, D. G., 1946.—“Bionomics of the carrot fly (*Psila rosae* Fab.). II. Soil populations of carrot fly during autumn, winter and spring.” 33 (3), 263–270.

(79a) Wright & Ashby deal with the bionomics of the larvae and pupae of the carrot fly (*Psila rosae* Fab.) in soil during the autumn and winter based on observations carried out in East Anglia over 3 seasons, 1943 to 1945. Many of the larvae and pupae die during this period and among the various agencies destructive to them, such as hymenopterous insect parasites, fungal and bacterial diseases, they may also be parasitized by nematodes, 2 unnamed forms of which were found in cadavers from most of the localities sampled. One form reached a length of 30 mm. [probably a Mermithid nematode]; the other was 0.2 mm. long and occurred in all parts of the body cavity. These nematodes occurred in less than 1% of the total population, but on a plot at Swaffham in October 1945, the level of parasitism was 28.5% for fly larvae and 2.9% for the puparia.

T.G.

80—Annals of Surgery.

- a. YANG, S. C. H. & LAUBE, P. J., 1946.—“Biliary ascariasis. Report of 19 cases.” 123 (2), 299–303.

(80a) From a study of 19 cases the authors conclude that biliary ascariasis should be suspected if a person below the usual age for cholelithiasis shows symptoms of biliary tract disease. If, in addition, the stools show *Ascaris* eggs, there has been recent vomiting of *Ascaris* adults and the pain has a peculiar distending quality, the diagnosis of *Ascaris* in the bile ducts can be made with reasonable certainty.

R.T.L.

81—Annals of Tropical Medicine and Parasitology.

- a. COWPER, S. G., 1946.—“Some notes on the maintenance and breeding of schistosome vectors in Great Britain, with special reference to *Planorbis guadaloupensis* Sowerby.” 40 (2), 163–170.
b. COWPER, S. G., 1946.—“A further note on the nomenclature and identity of the frog filaria, *Foleyella leiperi* (Railliet, 1916).” 40 (2), 171–172.
c. BERTRAM, D. S., UNSWORTH, K. & GORDON, R. M., 1946.—“The biology and maintenance of *Liponyssus bacoti* Hirst, 1913, and an investigation into its rôle as a vector of *Litomosoides carinii* to cotton rats and white rats, together with some observations on the infection in the white rats.” 40 (2), 228–254.

(81a) The satisfactory establishment of *Planorbis guadaloupensis* in aquaria for schistosome experiments requires little attention. Its life-history is outlined and its egg nests differentiated from those of *P. boissyi*, *Bullinus truncatus*, *Physopsis globosa* and *Lymnaea natalensis*. R.T.L.

(81b) The frog filaria, *Foleyella brachyoptera* differs from *F. leiperi* in the number of male papillae and the extent of the lateral alae, while its microfilaria is uniform in thickness. *F. dolichoptera* is "fairly identical" with *F. leiperi*. R.T.L.

(81c) Experimental evidence was obtained that microfilariae of *Litomosoides carinii* are ingested in considerable but variable numbers by nymphs and adults of *Liponyssus bacoti* when these feed upon the blood of infected cotton rats. 18% of 49 engorged females showed active sheathed microfilariae in numbers varying from 1 to 4. The majority of ingested microfilariae fail to develop and 24 mites exposed to infection as nymphs showed no infection 2 to 30 days later; but 16.7% of 36 females exposed to infection as adults showed developmental stages 3 to 33 days later. Of 11 females of another series 45.5% were positive 20 to 33 days later and one of them contained an active larva 935 μ long which is believed to be the infective form. Late developmental forms were not found associated with the mouth parts and it is suggested that transmission may not be directly associated with the bite of the mite. Both cotton rats and white rats were successfully infected with *L. carinii* as a result of exposure to infected mites, and to white rats by means of surgical transfer of adult worms to the pleural cavities. The results obtained, however, after infecting white rats, suggest that caution should be observed in accepting this host as satisfactory for chemotherapeutic research. J.J.C.B.

82—Annual Report of the Agricultural and Horticultural Research Station, Long Ashton.

- a. LLOYD, A. J., 1946.—"Technique for the study of clover stem eelworm, *Anguillulina dipsaci*, Kuhn." (Year 1945), pp. 153-156.
- b. MILES, H. W. & MILES, M., 1946.—"Eelworm pests and commercial vegetable production." (Year 1945), pp. 157-165.

(82a) Lloyd describes a method for estimating the level of eelworm infestation in soils harbouring the stem eelworm, *Anguillulina dipsaci*, causing stem disease in red clover. Samples of soil, from fields in which red clover has suffered from eelworm attack, are thoroughly mixed and seed boxes 12 in. by 16 in. are filled 2 in. deep. Red clover seed is then sown 1 in. apart by means of a perforated wooden frame. When the seedlings emerge they are examined for symptoms of disease and the presence of *A. dipsaci*. According to the number of plants affected and the numbers of eelworms found it is claimed that a forecast can be made of the likelihood of success or failure in attempting to grow red clover on a given field. Eelworm attack gives rise to a poor growth of lateral roots on a seedling and to fewer root nodules. T.G.

(82b) Miles & Miles review the distribution and the conditions leading to the increase to dangerous numbers of the following eelworm pests of vegetables: potato root eelworm (*Heterodera rostochiensis*), pea eelworm (*H. göttingiana*), beet eelworm (*H. schachtii*), brassica eelworm (*H. cruciferae*), root knot eelworm (*H. marioni*) and stem and bulb eelworm (*Anguillulina dipsaci*). The authors discuss the factors which, in combination with the nematodes, lead to crop disease. The many attempts which have been made by various research workers to find a method of controlling the parasites are reviewed, and the authors conclude by outlining a cropping policy based on the maintenance of high fertility and wide rotations which is, at present, the most satisfactory known means of reducing eelworm damage. Crops of soft fruits, asparagus and rhubarb, flowers such as pyrethrums and paeonies are suggested to widen rotations on land of high value. M.T.F.

83—Archives of Pathology.

- a. HARTZ, P. H., 1946.—"Human strongyloidiasis with internal autoinfection." 41 (6), 601-611.

(83a) A detailed study of the pathological lesions associated with *Strongyloides* infection showed that the adult worms occurred in the duodenum exclusively. The larvae which invaded

the epithelium of the small intestine and colon through the crypts of Lieberkühn were generally transformed into filariform larvae. In the deeper layers of the gut wall and in the liver these larvae were encapsulated in numerous eosinophilic granulomas. The lymphatic vessels were often occluded by granulomatous endolymphangitis provoked by the larvae. Similar granulomatous reactions occurred in the liver.

R.T.L.

84—Arkiv för Zoologi.

- a. ALLGÉN, C. A., 1946.—“Letzter Bericht über freilebende marine Nematoden aus dem Schalensand- und Kiesboden der Westküste Norwegens.” 37A (15), 1–26.
- b. SCHUURMANS STEKHOFEN, JR., J. S., 1946.—“Freilebende marine Nematoden des Skageraks und der Umgebung von Stockholm.” 37A (16), 1–91.

(84a) Allgén lists free-living marine nematodes collected from shelly-sand and gravel zones at 44 sites on the west coast of Norway. They belong to 30 different genera and the following are new: *Oncholaimus rørvikensis* n.sp., *Siphonolaimus rørvikensis* n.sp., *Theristus oistospiculum* n.sp., *T. normandicus* v. *gracillime-caudatus* n.var., *Metalinhomoeus marøyensis* n.sp., *Southernia rørvikensis* n.sp.

T.G.

(84b) Schuurmans Stekhoven describes free-living marine nematodes collected from the Skagerack and from the vicinity of Stockholm. Among a large number of forms found the following are new to science: *Metacylicolaimus flagellicaudatus* n.g., n.sp., *M. effilatus* n.sp., *Platycomopsis effilatus* n.sp., *Phanoderma rigidum* n.sp., *Enoplolaimus breviliatus* n.sp., *Oxyonchus pachylabiatu* n.sp., *Symplocostomella cavicaudata* n.sp., *Pareurystomatina biserialis* n.sp., *P. flagellicaudata* n.sp., *Paracyatholaimus effilatus* n.sp., *Choniolaimus novempapillatus* n.sp., *Halichoanolaimus microspiculoides* n.sp., *Stephanolaimus filicaudatus* n.sp., *Paralinhomoeus bocki* n.sp., *Metalinhomoeus effilatus* n.sp., *Linhomoeus brevisetosus* n.sp., *Eumorpholaimus cylindricaudatus* n.sp., *E. digiticaudatus* n.sp., *Rhabdodemania scandinavica* nom. nov.

T.G.

85—Australian Veterinary Journal.

- a. PULLAR, E. M., 1946.—“A survey of Victorian canine and vulpine parasites. IV. Nematoda.” 22 (3), 85–91.

(85a) Pullar continues his survey of helminth parasites of dogs and foxes in Australia, considering the nematodes in this section of the report. *Toxocara canis* occurs frequently in urban dogs and foxes, as does *Uncinaria stenocephala*: it is found very frequently in foxes, 70% being infested. It occurs also in rural dogs. *Toxascaris leonina* was found in both groups, but less frequently. Whipworm (*Trichuris vulpis*) was found in over 17% of the urban dogs but was apparently completely absent from rural dogs and from foxes. He records the presence of a few rarer helminths—*Oslerus osleri*, probably from one dog, and *Protospirura* sp. from a few foxes while there were no cases of *Dirofilaria immitis* or *Spirocerca sanguinolenta*. *Toxocara canis* was found mainly in young dogs while *U. stenocephala* occurred most frequently in year-old dogs.

P.A.C.

86—Bimonthly Bulletin. Ohio Agricultural Experiment Station.

- a. WILSON, J. D., 1946.—“Relative susceptibility of carrot varieties to nematode damage, yellows, and defoliation by blights.” 31 (239), 35–39.

(86a) Wilson states that the successful growing of carrots on the Ohio State Muck Farm at McGuffey has become increasingly difficult in recent years owing to damage from nematodes, yellows and defoliation blights. The nematode implicated is not specified but the author shows, by means of a table, that out of 35 varieties of carrot tested there was very little varietal resistance to nematode infestation. Some varieties were more severely damaged than others.

T.G.

87—Boletim do Museu Nacional, Zoologia.

- a. CARVALHO, J. C. M., 1946.—“Uma nova espécie de Gordiáceo do Brasil e considerações sobre *Chordodes brasiliensis* Janda. (Nematomorpha, Gordioidea).” No. 62, 8 pp. [English summary p. 7.]

(87a) Carvalho gives an illustrated description of a new gordiid under the name of *Beatogordius abaicomus* n.sp. and presents a revision of *Chordodes brasiliensis* Janda, 1893, the

hosts of which are insects of the family Mantidae. Pictures of the cuticle pattern of both males are given. T.G.

88—British Medical Journal.

- a. ANON, 1946.—“Experimental helminthic infection.” [Letters and Answers.] Year 1946, 2 (4469), 317.
- b. ANON, 1946.—“Intestinal worms stained with iron.” [Letters and Answers.] Year 1946, 2 (4472), 447.
- c. TAYLOR, E. L., 1946.—“Experimental helminthic infection.” [Letters and Answers.] Year 1946, 2 (4472), 448.
- d. LANDSBOROUGH, D., 1946.—“Ascariasis causing acute intestinal obstruction.” Year 1946, 2 (4473), 461.
- e. FORSTER, E. B., 1946.—“Insanity with epilepsy following infestation by *Cysticercus cellulosae*.” Year 1946, 2 (4475), 543.
- f. WEBER, F. P., 1946.—“Ascariasis and pulmonary infiltrations.” [Correspondence.] Year 1946, 2 (4475), 555.
- g. WATSON, J. M., 1946.—“Helminths infective to man in the Syrian hamster.” Year 1946, 2 (4476), 578.
- h. ANON, 1946.—“Intestinal parasites in dogs and children.” [Letters and Answers.] Year 1946, 2 (4482), 843.
- i. ANON, 1946.—“Threadworms in infants.” [Letters and Answers.] Year 1946, 2 (4485), 973.

(88a) This is an enquiry for a technique for the experimental infection of rabbits with a view to finding an effective anthelmintic for *Taenia solium* and *Enterobius vermicularis*. [The anonymous reply is not abstracted as it gives information which is subjected to criticism in a later issue of the B.M.J. See below No. 88c.] R.T.L.

(88b) In an anonymous reply it is suggested that the blackening of the threadworms may be due to the formation of ferrous sulphide. R.T.L.

(88c) Taylor criticizes the anonymous reply to a query on the procedure to be followed in the experimental study of *Taenia solium* and *Enterobius vermicularis*. He points out that the rabbit, the proposed experimental animal, is not a normal or suitable experimental host for either of these parasites. An additional anonymous note also points out that *T. solium* is exceedingly rare in this country but that there are several available allied species of *Taenia* in the dog and that rats and mice harbour oxyurids which could be used more satisfactorily for the experimental study of anthelmintics. R.T.L.

(88d) Landsborough reports from Fukien, South China a case of intestinal obstruction with abdominal distension and the marked “ladder-pattern” of small gut obstruction. Over 140 roundworms were removed by operation and many hundreds were left. Later anthelmintic treatment yielded only a few worms. The author remarks on the absence of any history of ascariasis pneumonia or of urticaria. R.T.L.

(88e) A case of cerebral cysticercosis is reported in which there were symptoms of epilepsy with concomitant mental deterioration. The patient had served with the army in India in 1936 to 1937. X-ray revealed 2 areas of calcification in the skull, one in the axilla and 3 in the thigh. There were no eggs in the faeces although in India worm segments had been passed. The eosinophilia was 1%. The symptoms were controlled by luminal 1 grain twice daily. R.T.L.

(88f) Weber, commenting on Landsborough’s case of ascariasis [see above No. 88d], suggests that it is only those who are allergic towards ascariasis who develop pulmonary infiltrations of the Loeffler type or other allergic manifestations. R.T.L.

(88g) Watson draws attention to several helminth infections of man to which the Syrian hamster (*Cricetus auratus*) is susceptible, but does not consider that in the handling of these laboratory animals there is much risk of infection. In 160 hamsters *Syphacia obvelata* occurred in 51.9% and *Hymenolepis nana* [?] *murina*] in 11.9%. The faeces of personnel handling the animals were examined for eggs of these helminths but proved negative. R.T.L.

89—Bulletin of the Bingham Oceanographic Collection.

- a. NIGRELLI, R. F., 1946.—“Studies on the marine resources of southern New England. V. Parasites and diseases of the ocean pout, *Macrozoarces americanus*.” 9, 187–221.

(89a) In Part II of his survey Nigrelli describes 4 of the 5 known helminths of the ocean pout, viz., (i) the metacercariae of *Cryptocotyle lingua* recorded for this host for the first time; (ii) *Porrocaecum decipiens* (?); (iii) *Contracaecum macrozoarcium* n.sp. which differs from other species in that (a) the caecum and appendix measure 1 mm. or over in length, (b) the ventriculus is sub-globular, (c) the spicules are sub-equal; (iv) *Echinorhynchus gadi*—its incidence and numbers are high. The tapeworm *Bothrimonus intermedius* already reported by Cooper was not observed by Nigrelli.

R.T.L.

90—Bulletin de la Société de Pathologie Exotique.

- a. BRISOU, J., 1946.—“Diagnostic du kyste hydatique par extrait de ténia.” 39 (5/6), 193–196.
 b. HARANT, H. & BRÈS, A., 1946.—“A propos de deux cas de parasitisme par filaires immatures.” 39 (7/8), 286–287.
 c. SOUBIGOU, X., 1946.—“A propos de funiculite tropicale.” 39 (7/8), 287–289.
 d. LINDBERG, K., 1946.—“Enquête épidémiologique sur la dracunculose dans un village du Deccan (Inde).” 39 (7/8), 303–318.
 e. LINDBERG, K., 1946.—“Dracunculose dans l'état de Djodhpour (Radjpoutana), Inde.” 39 (7/8), 318–328.

(90a) Brisou has examined the nature of antigens which give positive results in the Casoni test among patients suffering from hydatid cyst. Several suitable antigens can be obtained, usually from intestinal taenias as only hydatid scolices give useful antigens—the fluid being of little value. The polysaccharide fraction is the important part of the antigen for diagnosis. It contains up to 40% of a reducing sugar, is very stable except in the presence of emulsion when decomposition occurs rapidly.

P.A.C.

(90b) Of the 2 cases of infection with immature filarial worms reported by Harant & Brès, one has already been recorded with Morel in 1941. The other occurred in a soldier who had apparently acquired the infection in Senegal. A worm was extracted from a tumour in the neighbourhood of the 9th to 11th ribs, which had been diagnosed as a lipoma but which, on operation, was found to contain purulent fluid. The authors consider the worm to belong to *Dirofilaria repens* of the dog and they support Desportes' view that previous cases diagnosed as *D. conjunctivae* also belong to this species.

R.T.L.

(90c) From a study of 22 cases of tropical funiculitis during a stay of 30 months in Martinique, Soubigou supports Manson's opinion that this disease is due to *Wuchereria bancrofti*.

R.T.L.

(90d) Dracontiasis is prevalent in the village of Bhosra, near Kurduvadi. Lindberg's survey shows that 21.9% of the population acquired an infection at some period of their lifetime, the first infection occurring most frequently between the ages of 15 and 40. Tables are given showing the number of worms in each case, the number of years in which infections were acquired, the maximum number of worms acquired by individuals during one year, the number of persons affected during the years 1934 to 1938, and the locations of the erupting worms in the body. The cyclopoid fauna for the different types of wells is listed. *Thermocyclops vermifer*, the dominant species, is the principal vector of *Dracunculus medinensis*.

R.T.L.

(90e) Rajputana is to-day one of the chief asiatic foci of dracontiasis. One of the most affected areas is the State of Jodhpur, and particularly the towns Nagaur and Didwana, where the water supply consists of stagnant collections in natural depressions. The number of cases treated in the State Hospitals are tabulated: these totalled 528 for Nagaur and 708 for Didwana between 1937 and 1941. Lindberg discusses the factors which determine the seasonal incidence of the infection and the view is expressed that a certain degree of temperature is essential for the complete development of the parasite in its intermediate host. The local cyclopoid fauna is listed. Only one *Dracunculus medinensis* embryo was found, viz., in *Mesocyclops leuckarti*.

R.T.L.

91—Bulletin of the United States Army Medical Department.

- a. MOST, H., HAYMAN, JR., J. M. & WILSON, T. B., 1946.—“Hookworm in troops returning from the Pacific.” [Abstract.] 5 (3), 247.
- b. COGGESHALL, L. T., 1946.—“Lymphadenopathy and filariasis.” [Abstract.] 5 (3), 250-251.

(91a) The faeces of 11.5% of 2,500 American service personnel returning from the Pacific war zone showed hookworm eggs, both *Necator americanus* and *Ancylostoma duodenale* being found after treatment. Tetrachlorethylene did not prove as efficient in eliminating *Ancylostoma* as *Necator*. R.T.L.

(91b) It was found that lymphadenopathy could not be used as a diagnostic criterion for filariasis in marines returning from the Pacific war zone. R.T.L.

92—Canadian Journal of Comparative Medicine.

- a. GRIFFITHS, H. J., 1946.—“A summary of the use of phenothiazine in the control of cecal worms and in the prevention of blackhead.” 10 (8), 218-221.

(92a) Griffiths surveys the literature dealing with phenothiazine treatment of chickens and turkeys for *Heterakis gallinae*. He is ultimately interested in the control of blackhead by this means. The substance can be very useful in eliminating worms from the caeca, some workers having been 99.7% successful. However, feeding it in the mash continually over a long period was not effective in preventing infestation, and turkeys still developed blackhead. Caecal worms in both chickens and turkeys can be eliminated by this treatment, but in pheasants its value has not been proved. P.A.C.

93—Canadian Journal of Research. Section D. Zoological Sciences.

- a. COWAN, I. McT., 1946.—“Parasites, diseases, injuries, and anomalies of the Columbian black-tailed deer, *Odocoileus hemionus columbianus* (Richardson), in British Columbia.” 24 (3), 71-103.

(93a) Cowan found from the examination of 65 wild deer (*Odocoileus hemionus columbianus*) that helminth parasites were common in these animals in British Columbia. 17 species were recovered and 4 of them, *Oesophagostomum venulosum*, *Dictyocaulus viviparus*, *Fascioloides magna*, and *Nematodirus filicollis*, were found to cause disease not infrequently fatal. Some evidence was secured that cursorial predators selectively remove the more heavily parasitized deer. J.W.G.L.

94—Ceylon Journal of Science. Section B. Zoology.

- a. LOOS, C. A., 1946.—“Notes on free-living and plant-parasitic nematodes of Ceylon 2.” 23 (2), 51-55.
- b. CRUSZ, H., 1946.—“Contributions to the helminthology of Ceylon. II. Notes on some parasitic nematodes, with a description of *Anisakis tursiopsis* sp. nov.” 23 (2), 57-66.

(94a) Loos, continuing his investigations on free-living soil nematodes occurring in Ceylon soils, gives illustrated technical descriptions of the following new dorylaimid species: *Enchodelus dolichurus* n.sp., *E. minusculus* n.sp., and *Nygolaimus spiralis* n.sp. T.G.

(94b) Crusz describes *Anisakis tursiopsis* n.sp., a parasite of the stomach of the blue-nosed dolphin, *Tursiops truncatus* in the Indian Ocean. It can be distinguished by the presence of an extra papilla on each ventro-lateral lip, by the possession of an oesophageal sphincter, 8 pairs of post-anal papillae and by the shape of the eggs. He redescribes *Pseudophysaloptera soricina* from *Suncus coeruleus*: the male has a pair of slender spicules, unequal in size and pointed anteriorly. The Ceylon forms appear to agree more closely with those found in China than with the African forms. The larva of *Gnathostoma hispidum* was recovered from the body cavity of *Tropidonotus piscator*: it has been distinguished from the larva of *G. spinigerum* by the distribution of the spines—in this form they cover the body cavity completely. The definitive host is the wild boar. P.A.C.

95—Circular. Hawaii Agricultural Experiment Station.

a. ALICATA, J. E., 1946.—“The control of liver fluke of cattle in Hawaii.” No. 25, 19 pp.

(95a) Fascioliasis, due to *Fasciola gigantica*, is the most important parasitic disease of cattle in the Hawaiian Islands. It is specially prevalent on the windward side of the islands. The snail intermediary is *Fossaria ollula*. Infection may occur at any time of the year. Under local conditions concentrations of 1 to 200,000 and 1 to 300,000 of copper sulphate are necessary to kill these snails. Hexachlorethane, which is the best drug for the treatment of infected cattle, may be administered in dry form—10 gm. mixed with 1.75 gm. kamala extract in gelatin capsules or as an emulsion with bentonite and water. 20 c.c. of this emulsion containing 10 gm. hexachlorethane has given satisfactory results and is well tolerated. A supply of steamed bone meal or cane molasses for a few days before treatment is especially recommended for dairy cattle, but their milk should not be used for human consumption for a few days following treatment. An appendix gives useful tables for the estimation of weight of beef and dairy cattle by heart-girth measurements.

R.T.L.

96—Comptes Rendus (Doklady) de l'Académie des Sciences de l'URSS.

a. SMIRNOV, G. G. & KAMALOV, N. G., 1946.—“Duration of transit parasitism of larvae of Ancylostomidae in an abnormal host.” 52 (5), 465–467.

b. KRASTIN, N. I. & IVASHKIN, V. M., 1946.—“A contribution to the study of the biology of nematodes of the genus *Thelazia* Bosc, 1819, parasitic of the eye of cattle.” 52 (9), 833–835.

c. PESHKOVSKAYA, L. S., 1946.—“On the achromatic apparatus in the blastomeres of the egg of *Ascaris megalocephala* var. *bivalens* at the initial stages of cleavage.” 53 (2), 145–148.

(96a) Smirnov & Kamalov have studied further the viability of the infective hookworm larvae in hamsters. Their survival, which may last 9 months, is apparently determined by the absence of any morphological or physiological changes in the parasites which retain their specific boring activity and by their capacity to carry out their migrations repeatedly in these abnormal hosts.

R.T.L.

(96b) Of the 4 species of *Thelazia* known to occur in cattle, *T. rhodesi*, *T. gulosa* and *T. skrjabini* are present in U.S.S.R. The first of these is found exclusively in the inner canthus of the eye beneath the third eyelid. The others are located in the lachrymal gland duct of the third eyelid and cannot be detected by clinical examination. In the central belt of the Khabarovsk region the symptoms of thelaziasis begin to appear in June, reach their maximum in July and August, and vanish towards October, but the parasites are present throughout the year and reach their maximum in the winter. The larvae are never found in the faeces and only infrequently in tears and nasal mucus. They are extremely susceptible to desiccation and survive only for a few hours in water and physiological saline but in blood serum of cattle, at room temperature, they remain alive for 5 to 6 days. The authors conclude that infected cattle, not an undetermined intermediate host nor the external medium, are the main reservoir responsible for the yearly outbreaks of the disease, that the pathogeny of thelaziasis is associated not with the adult worms but with the youngest forms of the parasite, and that these are not eliminated to the exterior. As the sexually mature females have the vulva obliterated these may be devoured by an intermediate host or the larvae may possibly migrate into the tissue of the conjunctiva and into the skin whence they may be taken up by a biting insect. From these facts it is deduced that the life-cycle follows that of the Filariidae rather than that of the Spiruridae.

R.T.L.

97—Comptes Rendus des Séances de l'Académie des Sciences. Paris.

a. BOUGIS, P., 1946.—“Analyse quantitative de la micro-faune d'une vase marine à Banyuls.” 222 (19), 1122–1124.

b. DINULESCO, G., 1946.—“Sur les variations du cycle de développement larvaire chez les trématodes.” 223 (4), 214–216.

(97a) Bougis has made a quantitative analysis of the microfauna occurring in samples of marine mud obtained from a depth of about 30 metres in the Gulf of Lyons, Mediterranean Sea. By sieving and washing successive centimetre depths of a bulk sample the various kinds of organisms composing the microfauna were collected and enumerated, and it was found that nematodes were more numerous than any other group of organisms.

T.G.

(97b) In different groups of trematodes the various larval stages are developed or suppressed, and Dinulesco examines some of the factors determining this variability in two instances—an echinostome and a strigeid. In *Paludina vivipara* the sporocysts of *Echinoparyphium recurvatum* give rise to rediae and these to daughter-rediae; the resulting cercariae, however, do not leave the host but encyst in one of 3 organs: the hepato-pancreas, pericardium or genital gland. Those metacercariae in the hepato-pancreas live only 30 to 40 days in winter, and are ultimately reabsorbed. Those in the other organs remain infective in the spring. The sporocysts of *Cotylurus* sp. of Szidat, in *Planorbis* and *Limnaea*, give rise directly to cercariae: these are present in such masses that the genital gland may be involved to the extent of parasitic castration—the cercariae escaping in large numbers from this organ. In the tubules of the hepato-pancreas, the cercariae evoke a neoplastic tissue reaction, and become encapsulated in nodules of granulation-tissue with macrophages and fibroblasts—the metacercariae are finally reabsorbed. The development cycle is thus directly influenced by the tissue-reaction of of a particular organ of the intermediate host. N.G.S.

98—Comptes Rendus des Séances de la Société de Biologie. Paris.

- a. THURET, C. & THIBAUT, C., 1946.—“L'oxygène peut-il être utilisé comme vermifuge?” 140 (3/4), 89–91.
- b. COUTELEN, F., 1946.—“Les modes de formation des vésicules filles externes et internes du cénure sérial.” 140 (7/8), 258–259.

(98a) Thuret & Thibault report a sudden disappearance of eggs of *Hymenolepis nana* and *Aspicularis tetraptera* from the faeces of mice after one or two courses of 10 injections (daily or in 2 days) of liquid oxygen into the mid-intestine (the injections being given under anaesthesia). There was, however, approximately a 10% mortality of mice and it appears that the parasites were not killed. The authors conclude by saying that a form of oxygen which could be applied for a longer period to the parasites with a negligible toxicity to the host is desirable. M.R.Y.

(98b) Coutelen describes the process of development of daughter coenuri in *Coenurus serialis*. Exogenous coenuri develop as the result of proliferation of the entire wall, working outwards. Endogenous coenuri develop as the result of vacuolation of a primitive scolex. P.A.C.

99—Cornell Veterinarian.

- a. WHITLOCK, J. H., 1946.—“Ten per cent cunic for controlling gastro-intestinal helminthiasis in sheep.” 36 (1), 47–50.
- b. WHITLOCK, J. H. & BAKER, D. W., 1946.—“The diagnosis of diseases of lambs.” 36 (3), 241–250.

(99a) Cunic solution, a mixture of copper sulphate and black leaf 40, is usually recommended as a 1% or 2% solution for haemonchosis, ostertagiasis, moniezirosis and trichostrongylosis in sheep. The simple copper salts are only lethal in an acid medium and are probably only useful in the prevention of helminth infections, not in their treatment. The present investigations show, however, that 10% cunic (i.e. 10% copper sulphate and 10% black leaf 40) is safe and reasonably effective. None of 3,690 treatments resulted fatally. Those flocks which received an initial dose of tetrachlorethylene or phenothiazine, followed by monthly treatments with cunic, made excellent gains in weight. The control of *Trichostrongylus* and *Moniezia* was, however, poor. 445 sheep were treated in 75 minutes. R.T.L.

(99b) Symptoms of deficiencies and of parasitism are difficult to distinguish. Whitlock & Baker treat outbreaks of parasitic disease not only with anthelmintics but also with supporting therapy to correct any dietary deficiency. In sheep iron, cobalt and vitamin A are given; in ruminants there is evidence of need of a vitamin B supplement. Pure *Trichostrongylus* infections which may show little or no anaemia are becoming commoner with the widespread use of phenothiazine. Animals with pure *Haemonchus* and *Nematodirus* infections tend to become constipated. Pure infections with *Haemonchus* tend to develop most commonly in the southern and great plains area of U.S.A., while pure infections with *Nematodirus* occur in the Dakotas and probably in the valley regions of Montana and Wyoming. R.T.L.

100—Estate Magazine.

- a. MACLAGAN, S., 1946.—“Hill sheep farming pests.” 46 (11), 379-383.

(100a) The loss to the sheep industry in Scotland through helminth parasitism alone is estimated at £250,000 per annum at least. More especially serious are the losses on low ground farms. Symptoms are most obvious in September and October. Ewes are the arch-polluters of pasture. The shifting of ewes and lambs every 10 days provides the key to the problem of control in lambs. Mixed grazing is strongly advised. Phenothiazine should be given to lambs when 2 months old and repeated at monthly intervals until weaning time. R.T.L.

101—Food Industries.

- a. SPINDLER, L. A., DUNKER, C. F. & HANKINS, O. G., 1946.—“Trichinae killed by 120-deg. F. dehydration.” 18 (3), 342-344.

(101a) From the tests described in this paper it would appear that so far as danger of consumers acquiring *Trichina* infection is concerned, pork dried to a moisture level of 2% is quite safe when a temperature of 120°F. or higher is employed in dehydration, and when the temperature does not fall below 120°F. even a moisture content of 7% or 8% would appear to be satisfactory from this point of view. R.T.L.

102—Indian Journal of Medical Research.

- a. HYNES, M., ISHAQ, M., MORRIS, T. L. & VERMA, O. P., 1946.—“Anaemia and malnutrition in Indian Army recruits.” 34 (1), 119-129.

(102a) In a study on the correlation between the blood findings and nutritional condition of 801 South Indian army recruits, anaemia was clearly correlated with cutaneous and ocular vitamin deficiency signs. The authors noted that only in the more malnourished third of the men did an increasing hookworm load progressively add to the anaemia. R.T.L.

103—Journal of the American Medical Association.

- a. COGGESHALL, L. T., 1946.—“Filariasis in the serviceman: retrospect and prospect.” 131 (1), 8-12.

104—Journal of the American Society of Agronomy.

- a. BURTON, G. W., McBETH, C. W. & STEPHENS, J. L., 1946.—“The growth of Kobe lespedeza as influenced by the root-knot nematode resistance of the Bermuda grass strain with which it is associated.” 38 (7), 651-656.

(104a) A mixture of Bermuda grass (*Cynodon dactylon*) and annual lespedeza (*Lepedeza striata*) makes a very desirable permanent pasture in the south-eastern United States, but on the lighter soils of the Coastal Plain, which are universally infested with *Heterodera marioni*, the lespedeza quickly dies out through root-knot infection. Of 28 strains of annual lespedeza tested, none showed any resistance to root-knot, but certain selections of Bermuda grass are highly resistant. Five resistant and 3 susceptible strains of this grass were grown for 5 years in infected soil, and the plots then sown with Kobe lespedeza in February 1944. By the following June significant differences in the stands of lespedeza on the different plots were evident and they were very striking by September, when the hay obtained from the plots of susceptible grass contained less than 1% of lespedeza, while on the plots of resistant grass 24.1% of the total weight of hay was contributed by lespedeza. An examination of the roots showed that a high percentage of the lespedeza seedlings growing with susceptible Bermuda grass was infected with root-knot by August, and most of them had died out by September, while very few were infected in the plots of resistant grass. The authors consider that root-knot nematodes are unable to survive for long in soil where a pure stand of a resistant grass, such as Coastal Bermuda, is growing and that the naturally occurring nematodes would die out sufficiently in 2 years for a susceptible legume to be successfully grown with it then. M.T.F.

105—Journal of the American Veterinary Medical Association.

- a. KOUTZ, F. R. & REBRASSIER, R. E., 1946.—“The infection of cattle with gastrointestinal parasites of sheep.” 109 (836), 359–361.
- b. TURK, R. D., WARWICK, B. L. & BERRY, R. O., 1946.—“The use of anthelmintics with wild species of sheep and goats.” 109 (836), 366–368.
- c. ROBERTS, I. M. & ROBERTS, S. R., 1946.—“Canine filariasis—a report.” 109 (837), 490.

(105a) Only 2 *Cooperia curticei* were found in a steer and one *C. oncophora* in a heifer when slaughtered after being kept on pasture which had been grazed by a heavily infected flock of sheep. The cattle had also large numbers of nodules in the intestinal and caecal walls. Parasite-free lambs, which were placed on the pasture at the same time as the cattle, acquired heavy infections with *Haemonchus*, *Ostertagia*, *Cooperia*, *Trichostrongylus*, *Nematodirus*, *Oesophagostomum*, *Trichuris* and parasitic nodules. R.T.L.

(105b) The two anthelmintics, tetrachlorethylene and phenothiazine, were non-toxic in the usual doses to *Ovis musimon* (mouflon), *Ammotragus lervia* (Barbary sheep) and *Hemitragus jemlahicus* (Himalayan tahr). Nicotine sulphate with copper sulphate was non-toxic to a mouflon but toxic to a Barbary. R.T.L.

(105c) That dirofilariasis is endemic in central California is proved by the finding of 3 infected dogs born and reared in Richmond, near San Francisco. R.T.L.

106—Journal of the Council for Scientific and Industrial Research. Australia.

- a. FRANKLIN, M. C., GORDON, H. McL. & MACGREGOR, C. H., 1946.—“A study of nutritional and biochemical effects in sheep of infestation with *Trichostrongylus colubriformis*.” 19 (1), 46–60.
- b. CARTER, H. B., FRANKLIN, M. C. & GORDON, H. McL., 1946.—“The effect on wool production of a mild infestation with *Trichostrongylus colubriformis* in sheep.” 19 (1), 61–64.

(106a) Weaner lambs experimentally infected with *Trichostrongylus colubriformis* showed a slower live-weight increase, a significant depression in protein digestion and a significantly poorer utilization of calcium and phosphorus than the worm-free control animals. The metabolism trials were confirmed in the case of minerals by blood analyses. No obvious clinical effects were observed in the experimental animals. J.W.G.L.

(106b) Wool production from tattooed skin patches in weaner lambs experimentally infected with *Trichostrongylus colubriformis* was reduced to 40% of that of worm-free controls. The infections produced were mild according to customary standards. J.W.G.L.

107—Journal of the Department of Agriculture. South Australia.

- a. SMITH, W. S., 1946.—“Pig diseases and their control.” 49 (8), 330–334.
- b. ANON, 1946.—“Treatment of worms in pigs.” 49 (9), 398.

(107a) *Ascaris lumbricoides* is the only important helminth parasite of pigs in South Australia. It is recommended that oil of chenopodium 1 oz. added to 19 oz. of castor oil or raw linseed oil be given at age dose rates ranging from $\frac{3}{4}$ fluid oz. at 8 weeks to 5 fluid oz. at 12 months and over. R.T.L.

(107b) Although oil of chenopodium is the most efficient medication for *Ascaris* in pigs, phenothiazine sifted through a flour-sifter and mixed with a small feed may be used. It is emphasized that control cannot be effected by treatment alone and that sanitation in the yards to prevent reinfection is an important factor. R.T.L.

108—Journal of the Department of Agriculture. Western Australia.

- a. TOOP, C. R., 1946.—“The cystic tapeworms (bladder-worms) of sheep.” 23 (1), 12–18.

(108a) Three cystic tapeworms occur in sheep in Western Australia. Of these *Cysticercus ovis* and hydatid cysts are of considerable importance. *Cysticercus tenuicollis* is only important

owing to the possibility that it may be erroneously diagnosed as *Echinococcus*. Control measures for all 3 species should be directed towards the prevention of infection of dogs and by treatment for the removal of their adult worms.

R.T.L.

109—Journal of the Iowa State Medical Society.

- a. ROTKOW, M. J., 1946.—“Tropical diseases in returning military personnel.” 36 (3), 98–102.

(109a) Among returning military personnel to America one of the most important parasites is *Wuchereria bancrofti*. Rotkow doubts if it is ever likely to gain a foothold in U.S.A. as there are too few microfilariae in the blood of infected individuals to act as a reservoir for infection of mosquitoes. It was once endemic in South Carolina but died out naturally. Other helminths mentioned are hookworm, tapeworms, *Ascaris*, *Strongyloides*, whipworm and *Bilharzia*. Methods of examining stools for their eggs are very briefly mentioned. Protozoal and bacterial diseases are also lightly considered.

P.A.C.

110—Journal of Mammalogy.

- a. PACKARD, F. M., 1946.—“An ecological study of the bighorn sheep in Rocky Mountain National Park, Colorado.” 27 (1), 3–28.
 b. TINER, J. D., 1946.—“Some helminth parasites of skunks in Texas.” 27 (1), 82–83.
 c. RAUSCH, R. & TINER, J., 1946.—“*Obeliscoides cuculi* from the woodchuck in Ohio and Michigan.” 27 (2), 177–178.
 d. DEARBORN, N., 1946.—“Miscellaneous notes.” 27 (2), 178.
 e. SIEGLER, H. R., 1946.—“Guinea worm infestation of raccoons in New Hampshire.” 27 (2), 179.

(110a) Light infections with *Thysanosoma actinioides*, *Ostertagia marshalli*, *Skrjabinema ovis* and moderate infections with *Nematodirus filicollis*, *Ostertagia* sp. and lungworms were noted in the examination of the Rocky Mountain bighorn sheep (*Ovis canadensis canadensis*) which have been decreasing during recent years.

R.T.L.

(110b) From 170 skunks belonging to the genera *Mephitis*, *Spilogale* and *Conepatus*, collected in Texas, the following species were recovered: *Oochoristica* sp., *Mesocostoides* sp., *Physaloptera maxillaris*, *Molineus* sp., *Skrjabinogylus chitwoodorum* and *Filaria martis*. There were also specimens of an unidentified acanthocephalan.

R.T.L.

(110c) Rausch & Tiner record for the first time the presence of *Obeliscoides cuculi* in *Marmota monax* in Ohio and Michigan. There are several records of the species in this host in Minnesota and in Missouri, and a high percentage rate of infestation has often been noticed. It was as high as 46.6% in material from Ohio, while cottontail rabbits in this district were infested to the extent of 21.4%. Cottontail rabbits have usually been considered the natural host of the species.

P.A.C.

(110d) Writing from Hilton Village, Virginia, Dearborn records that specimens of *Diocotylome renale* were found between the outer and inner walls of the stomach of one out of 500 minks.

R.T.L.

(110e) *Dracunculus insignis* is reported from *Procyon lotor lotor* in New Hampshire. R.T.L.

111—Journal of the Mount Sinai Hospital.

- a. SNAPPER, I. & MERLISS, R., 1946.—“Observations on two cases of human filariasis (*Wuchereria bancrofti* and *Mansonella ozzardi*).” 12 (6), 1032–1038.

(111a) Stilbamidine gave no appreciable effect on a case of infection with *Wuchereria bancrofti* and *Schistosoma mansoni*. Gentian violet administered by intravenous drip in a case of mixed infection with *W. bancrofti* and *Mansonella ozzardi* was moderately effective against the microfilariae of the latter but totally ineffective against those of the former.

R.T.L.

112—Journal of Parasitology.

- a. CHANDLER, A. C., 1946.—“The making of a parasitologist.” [Presidential Address.] 32 (3), 213-221.
- b. SUTLIFF, W. D. & ECHANDI G., R. A., 1946.—“Pinworm (*E. vermicularis*) and other intestinal parasites in Costa Rican children.” 32 (3), 233-236.
- c. CHANDLER, A. C., 1946.—“Helminths of armadillos, *Dasypus novemcinctus*, in eastern Texas.” 32 (3), 237-241.
- d. CHANDLER, A. C., 1946.—“Observations on the anatomy of *Mesocestoides*.” 32 (3), 242-246.
- e. WILLIAMS, R. W., 1946.—“The laboratory rearing of the tropical rat mite, *Liponyssus bacoti* (Hirst).” 32 (3), 252-256.
- f. MOORE, D. V., 1946.—“Studies on the life history and development of *Moniliformis dubius* Meyer, 1933.” 32 (3), 257-271.
- g. PRATT, I. & NEWTON, W. L., 1946.—“The migration of infective larvae of *Wuchereria bancrofti* within the mosquito host and their rate of escape under laboratory conditions.” 32 (3), 272-280.
- h. MACFARLANE, D. G. & MACY, R. W., 1946.—“*Cercaria oregonensis* n.sp., a dermatitis-producing schistosome cercaria from the Pacific Northwest.” 32 (3), 281-285.
- i. BIJLMER, J., 1946.—“An exceptional case of oxyuriasis of the intestinal wall.” 32 (4), 359-366.
- j. KUO, S. C., 1946.—“Further studies on distribution of *Schistosomiasis japonica* in Szechwan Province, China.” 32 (4), 367-368.
- k. MOORE, D. V., 1946.—“Studies on the life history and development of *Macracanthorhynchus ingens* Meyer, 1933, with a redescription of the adult worm.” 32 (4), 387-399.
- l. FRANKS, M. B., 1946.—“Specific soluble antigen in the blood of filarial patients.” 32 (4), 400-406.
- m. MENZIES, R. J., 1946.—“*Benedenia noblei*, a new monogenetic trematode of the Pacific Coast rock fish.” 32 (4), 428-430.
- n. HIGHBY, P. R., 1946.—“A technique for xenodiagnosis of filariasis.” 32 (4), 433-434.
- o. LARSH, JR., J. E., 1946.—“A comparative study of *Hymenolepis* in white mice and golden hamsters.” 32 (5), 477-479.
- p. STOLL, N. R., 1946.—“*Necator americanus* and *Ancylostoma duodenale* in Guam, Leyte, and Okinawa, with a note on hookworm egg sizes.” 32 (5), 490-496.
- q. AVERY, J. L., 1946.—“The incidence of filariasis in the central Philippines.” 32 (5), 497-498.
- r. CHRISTENSEN, N. O., OLSEN, Sv. J. & ROTH, H., 1946.—“Incidence of lungworms and gastrointestinal parasites in Copenhagen cats.” 32 (5), 514-515.
- s. CHITWOOD, B. G., McINTOSH, A. & PRICE, E. W., 1946.—“Report of the committee on nomenclature. Authors of combinations of zoological names.” 32 (5), 519-520.

(112b) The incidence of *Enterobius vermicularis* has not been reported previously from Costa Rica. By using the NIH cellophane applicator 4 out of 92 children, i.e. 4.3%, were found to be positive but in no case were eggs numerous. Of other helminths, *Trichuris trichiura* and *Ascaris lumbricoides* were the most prevalent. The NIH swab, however, failed to reveal their presence except occasionally as contrasted with the routine examination of the stools microscopically. The incidence of *T. trichiura* was 72.8%, that of *A. lumbricoides* 54.3%, and hookworm 43.5%. Many of these were heavy infections. The other helminths noted were *Strongyloides stercoralis* 8.7%, *Taenia* sp. 4.3%. It is suggested that the low incidence of *E. vermicularis* may be due to the outdoor life of the children who came from rural areas, the dry and sunny climate and the less elaborate clothing. R.T.L.

(112c) Armadillos are exclusively insectivorous yet they do not harbour any adult helminths which require arthropod intermediary hosts. In 8 specimens obtained from eastern Texas only *Brachylaemus virginianus* and *Aspidodera fasciata* were found. Encysted larvae of spiruroids occurred in large numbers in armadillos captured in areas where pigs were ranging freely and it is suggested that by picking up infected arthropods these animals play some part in reducing the danger of infection of the pigs. The encysted specimens were allotted to the genera *Hamanniella* sp., *Physocephalus* sp., *Ascarops* sp. and *Oncicola canis*, and in every instance these larvae were dead and often calcified. R.T.L.

(112d) Chandler describes some of the finer points of the anatomy of the genital system in *Mesocestoides latus*. The “uterine capsule” is shown to be a true paruterine organ, developing from an independent mass of cells which acquires a cavity and later establishes a connection with the uterus. It arises, however, posterior to the true uterus. The ootype and

Mehlis' glands are placed close behind the ovaries before the entrance of the vitelline duct. He establishes also the presence of vasa efferentia. They are extremely fine tubes not readily seen in sexually active cells but remain in gravid cells as dried mummified structures. P.A.C.

(112e) Williams describes a method for the rearing and cultivation of rat mites, *Liponyssus bacoti*, an intermediate host of *Litomosoides carinii*. He builds an artificial rat nest approximating to those occurring naturally. A thick layer of loam is spread over the bottom of a box, covered thickly with newspaper, the whole being covered with straw which is bunched against the sides of the box. Small animal cages are placed within this nest. The straw provides a suitable large surface over which the mites can crawl while the soil absorbs rat urine. Neither grass, hay nor wood shavings are suitable substitutes for straw as they mat and hold urine. It is advisable to give the rats their water only in the food supply so as to cut down the quantity of urine formed. A minimum humidity of 70% is necessary for rapid reproduction of the mites. P.A.C.

(112f) Moore describes the development of *Moniliformis dubius* in the intermediate host, *Periplaneta americana*. The eggs hatch in the mid-gut, the acanthor, i.e. the contained larvae, being free in 48 hours. They penetrate the gut wall, wander considerably among its tissues and after 10 to 12 days appear on the outer wall of the gut, drop into the body cavity, and become embedded in the fat body. It develops to the pre-acanthella stage in 38 to 44 days: the beginnings of all the body organs can be seen and the larva lies within a clear hyaline sheath. The infective stage to which the term acanthella is given does not appear for 7 to 8 weeks after ingestion by the cockroach, depending mainly on the surrounding temperature. The hooks become more heavily chitinized, the lemnisci develop and the nuclei migrate early into the buds. The larva is enclosed within a cyst which is dissolved off in the definitive host. Experimental infections were achieved in the cotton rat, *Sigmodon hispidus*, a new host, but negative results were obtained with guinea-pigs and rabbits. Infective larvae may survive in the gut of various cold-blooded vertebrates for 10 days but cannot attach themselves permanently. P.A.C.

(112g) It is generally agreed that the larvae of *Wuchereria bancrofti* migrate eventually to the head and proboscis of the mosquito host and may escape as a result of external stimuli. The authors now give statistical information hitherto lacking. The data obtained experimentally by feeding *Culex quinquefasciatus* on a volunteer indicate that the larvae leave the mosquito in considerable numbers after the 18½ days of infection and the large majority by the 24½ day. The larvae escape from the proboscis spontaneously when they are too tightly packed or when the mosquito is fed on sugar-water. R.T.L.

(112h) Bifid-tailed cercariae developing in sporocysts in *Physa ampullacea*, found in the vicinity of Portland, U.S.A., produced dermatitis experimentally in 6 persons. The cercaria is described as *C. oregonensis* n.sp. and is differentiated from *C. elvae* from which it differs in certain measurements. The tail of *C. oregonensis* is about 0.025 mm. longer than in *C. elvae* while the furcae of the latter are about 0.032 mm. longer than in the former. The cercariae are discharged from the mollusc principally between 6 p.m. and midnight, whereas *C. elvae* discharge in the late afternoon. A naturally acquired "weed rash" was acquired by swimming at 10 p.m. R.T.L.

(112i) This is substantially a presentation in English of a paper published in Dutch in 1944 in Ned. Tijdschr. Geneesk., Vol. 88, No. 1/2, 24-26. [see Helm. Abs., XIII, No 424a]. R.T.L.

(112j) Kuo shows that human schistosomiasis due to *S. japonicum* is much commoner in Szechwan Province, China than has been suspected. It is widespread too in cattle in which *Ornithobilharzia turkestanicum* is also frequent. This latter species occurs in the mesenteric vessels of about 40% of the cattle slaughtered in Chengtu. Infected snails collected in Pengshien, and identified by Bartsch as *Schistomophora slateri*, are regarded by Tucker Abbott as merely a form or new subspecies of *Oncomelania nosophora*. R.T.L.

(112k) An extended description is given of *Macracanthorhynchus ingens* found in 11 out of 13 raccoons (*Procyon lotor lotor*) in Texas. Its life-history, hitherto unknown, has been followed experimentally in the larvae of scarabaeid beetles, *Phyllophaga crinita*, *P. hirtiventris*

and *Ligyris* sp. At 20°C. to 22°C. development requires 60 to 70 days. The various stages are described in detail and are illustrated. R.T.L.

(112l) Franks has demonstrated 2 antibodies and a soluble antigen in the blood of patients harbouring *Wuchereria bancrofti*. The antibodies are directed against the microfilariae and against the adult worm. Sera containing soluble antigen can be used for diagnostic tests though it is not always present in the same concentration for it seems to be related inversely to the number of microfilariae present. It is possible that this antigen may remove antibodies from the blood stream for many cases are on record where negative results have been obtained in diagnostic tests in patients definitely carrying filariae, i.e. when microfilariae were present in the circulating blood. P.A.C.

(112m) Menzies describes *Benedenia noblei* n.sp. from the gills of *Sebastes paucispinus* from Monterey Bay, California. It is characterized by having an intra-ovarial as well as a vaginal receptaculum seminis, and an intra-ovarian fertilization chamber. Glands of Goto are present containing 5 to 7 giant nuclei—each with 3 dark-staining rod-like bodies. It bears some resemblance to *B. convoluta*. N.G.S.

(112n) Highby confirms quantitatively the conclusions of earlier observers that microfilariae of *Wuchereria bancrofti* are proportionately more numerous in blood ingested by *Culex fatigans* than in the peripheral circulation of the patient. This method of xenodiagnosis may prove useful in the diagnosis of light infections but several mosquitoes should be used in such cases. R.T.L.

(112o) Larsh compares infestations with *Hymenolepis nana* in white mice and golden hamsters, *Cricetus auratus*, using as indicators the percentage development of the adults, the length of 11-day-old worms and the extent of the prepatent periods. The cestode would appear to develop more rapidly in the hamsters, both prepatent and patent periods being shorter than in mice. More worms developed and their rate of growth was greater. P.A.C.

(112p) Of 1,708 hookworms recovered from 21 Guam natives after treatment or necropsy, 24% were *Necator americanus*. In 62% of these individuals *Ancylostoma duodenale* only was present while *N. americanus* was in no case found alone. The highest worm counts were 337 and 314. From 14 servicemen at Guam 374 hookworms were recovered of which 85% were *Necator*. In 64% of individuals *Necator* only was present and in 36% *Ancylostoma* only. The highest worm counts were 108 and 71. From 23 marines returned from Leyte after 2 months' service 1,570 worms were recovered of which 82% were *Necator*. In 13% of individuals *Necator* only was present and in 26% *Ancylostoma* only. The highest worm counts were 388 and 371. From 42 natives of Okinawa 404 worms were recovered of which 70% were *Necator*. In 57% of individuals *Necator* only was present and in 5% *Ancylostoma* only. The highest worm counts were 79 and 46. It was not found practicable to differentiate *Necator* and *Ancylostoma* from a comparison of egg sizes. J.J.C.B.

(112q) A survey of the incidence of filariasis among the native populations of the San Pedro Bay (Leyte Gulf) area of the central Philippines revealed only microfilariae of *Wuchereria bancrofti*. The percentages positive in night blood were as follows: Tolosa, 253 examined, 2.8% positive; Salcedo, 300 examined, 1.3% positive; Mercedes, 436, 9.6%; Mercedes (day blood), 353, 3.4%. The higher incidence at night at Mercedes indicates a nocturnal periodicity, though the incidence in this area at noon is higher than is normally encountered in a nocturnally periodic area at mid-day. The possible significance of this is discussed. The survey indicated a low incidence of microfilariae among the native population of the area. J.J.C.B.

(112r) From an examination of cats in Copenhagen *Aelurostrongylus abstrusus*, *Ollulanus tricuspis*, *Capillaria putorii*, *Ancylostoma caninum* and *Cryptocotyle concava* are recorded from Denmark for the first time. *Cryptocotyle lingua*, observed as a natural infection in 6 out of 20 cats, had hitherto been recorded only as an experimental infection. *Trichinella spiralis* and *Dipylidium caninum* were absent although the latter was observed by Schmit-Jensen in 1918. The other helminths observed were *Toxocara cati* and *Taenia taeniaeformis*. R.T.L.

(112s) A committee of the Helminthological Society of Washington is of opinion that the proper citation of the tapeworm described by Kourí as *Raillietina cubensis* n.sp. in 1939 is *Inermicapstifer cubensis* (Kourí, 1939) Stunkard, 1941. R.T.L.

113—Journal of Pharmacology and Experimental Therapeutics.

- a. CULBERTSON, J. T. & PEARCE, E., 1946.—“Chemotherapy of filariasis (*Litomosoides carinii*) in the cotton rat by the administration of stibanose (solustibosan).” 87 (2), 181–184.

(113a) This paper slightly expands an already published abstract [see Helm. Abs., Vol. XIV, No. 220bv] which is not referred to in its list of references. The additions are a more detailed statement of the effect of stibanose (solustibosan) on *Litomosoides carinii* in 12 cotton rats and a photograph showing that most of the worms recovered from the pleural space after treatment were massed together in fibrinous exudate. While the adult worms were killed promptly, the microfilariae only slowly disappeared from the blood. R.T.L.

114—Journal of the Royal Naval Medical Service.

- a. WOLLEY, E. J. S., 1946.—“The health of the civilian population of Tristan da Cunha.” 32 (1), 3–15.

(114a) Woolley discusses the general health and way of life among the inhabitants of Tristan da Cunha. The only helminth species mentioned as being present is *Ascaris lumbricoides* which affected almost the whole population. After administration of santonin, vast numbers of nematodes were obtained—a small boy produced 55 and a woman a large number weighing 1½ lb. They were provided with better sanitation and a clean water supply. P.A.C.

115—Journal of Tropical Medicine and Hygiene.

- a. HEATHCOTE, R. St. A., 1946.—“The diamidines: their pharmacological actions and their therapeutic uses in some tropical diseases.” 49 (2), 33–38.

(115a) Heathcote is of opinion that stilbamidine is too uncertain in action for routine use in schistosomiasis, although it may be of value in certain cases. Miracidia can still be hatched from eggs after treatment. The toxic effects following intravenous injections are often alarming but not dangerous. Late nervous phenomena are also reported. R.T.L.

116—Kirton Agricultural Journal.

- a. WOOD, J., 1946.—“Potato root eelworm—a survey in Holland (Lincs.).” No. 11, pp. 43–48.

(116a) After briefly outlining the life-history and importance of potato root eelworm (*Heterodera rostochiensis*), Wood gives the results of a survey of potato crops which failed from this cause in Holland (Lincs.) during 1944 and 1945. He states that 20% of the total arable land in the county is badly infested and other land is contaminated. 25% of the failures occurred after too short a rest had been given to infested land, although in some cases 7 or 8 years had been allowed. The only recommendation which can be given for control of eelworm disease is a widening of the crop rotation: at least 6 years' rest should be given after a failure. Growers should look for eelworm on the growing plants and seek advice if it is present. M.T.F.

117—Lancet.

- a. EDITORIAL, 1946.—“Threadworms.” Year 1946, 1 (6403), 742–743.
b. SCHÜFFNER, W., 1946.—“Threadworms.” [Correspondence.] Year 1946, 1 (6406), 872.
c. EDITORIAL, 1946.—“Filariasis in the Pacific.” Year 1946, 1 (6409), 967–968.

(117b) Schüffner redescribes his method of diagnosing *Enterobius* infection which was erroneously cited in a leading article in the Lancet of 18 May, 1946. R.T.L.

118—Lloydia.

- a. KARLING, J. S., 1946.—“Brazilian chytrids. VIII. Additional parasites of rotifers and nematodes.” 9 (1), 1-12.

(118a) Karling describes *Phlyctochytrium nematodeae* n.sp., a fungoid parasite living in nematode adults, eggs and cysts found in soil samples from Matto Grosso. Eggs are certainly killed when infested but the lethal effect on adults is not definitely known. It is characterized by minute zoospores, the shape of the sporangia and general appearance of the resting spores.

P.A.C.

119—Military Surgeon.

- a. MARCONIS, J. T., 1946.—“Study and treatment of 27 cases of Schistosomiasis mansoni with fuadin.” 99 (1), 34-39.

(119a) The stools of 97.7% of 27 Puerto Ricans in the U.S.A. Army who were treated intramuscularly with 75 c.c. of fuadin, divided into 16 injections, were free from *Schistosoma mansoni* ova 5 days after completion of treatment. In 15 out of 25 cases examined proctologically rectal mucosa changes were observed.

R.T.L.

120—Nature. London.

- a. THIRUMALACHAR, M. J., 1946.—“Bud rot of areca palms in Mysore.” [Correspondence.] 157 (3978), 106-107.
b. BERTRAM, D. S., UNSWORTH, K. & GORDON, R. M., 1946.—“Transmission of *L. carinii* to laboratory animals.” [Correspondence.] 158 (4012), 418.

(120a) Thirumalachar gives an account of a serious disease of areca palms which has been known for 50 years near the village of Thirthahalli, in Mysore State, India. The disease is a kind of bud-rot leading to the gradual shedding of the leaves one after another so that, ultimately, the entire crown slips out leaving the bare stem. Microscopic examination of affected tissues etc., has revealed the presence of an eelworm belonging to the genus *Aphelenchus* [*Aphelenchoides*?]. The author discusses the similarity of the disease to red-ring disease of coconut palms, occurring in the West Indies, with which the eelworm, *Aphelenchoides cocophilus* (Cobb) is associated.

T.G.

(120b) The authors do not subscribe to the opinion that hamsters, white rats and white mice, experimentally infected with *Litomosoides carinii*, are suitable laboratory animals for use in chemotherapeutic investigations on filariasis. Their experience with white rats showed that although the worms reach maturity in these animals, a permanent strain was not established. Caution must be exercised before accepting the view that the presence of microfilariae in the peripheral blood of mice and hamsters implies that they are suitable hosts in which to establish a permanent strain of filariasis for chemotherapeutic studies.

J.J.C.B.

121—New York State Journal of Medicine.

- a. KAUFMANN, W., 1946.—“Diagnosis and management of certain tropical diseases in returning veterans.” 46 (3), 290-298.

122—New Zealand Journal of Agriculture.

- a. BOBBY, F. C., 1946.—“The incidence of poultry diseases.” 72 (6), 597-599.
b. HUDSON, J. P., 1946.—“Combating pests and diseases of chrysanthemums.” 73 (1), 91, 93-94.
c. WHITTEN, L. K., 1946.—“Prevention of hydatids.” 73 (2), 97-103.
d. ANDERSON, O. J. C. & CUNNINGHAM, I. J., 1946.—“Bluestone topdressing from the air.” 73 (3), 193, 195, 197.

(122a) A survey of poultry diseases based on information collected during the last 5 years has been made for New Zealand by F. C. Bobby. The number of outbreaks recorded as due to roundworms is given at 5%. No serious outbreaks due to tapeworms were reported.

R.T.L.

(122b) Hudson discusses a number of pests and diseases affecting chrysanthemums including eelworm disease due to *Aphelenchoides ritzema-bosi*. He gives a general account of the

symptoms shown by affected plants, makes a number of practical suggestions for keeping the disease in check in the garden, and finally recommends the hot water treatment of affected stools, i.e. 20 minutes in a bath of water maintained at 110°F. before planting out for the production of cuttings.

T.G.

(122c) The two most important measures for the prevention of hydatid disease are (i) regular treatment of dogs with arecoline hydrobromide and (ii) elimination of reinfection of the dogs by preventing them from eating infected livers and lungs of slaughtered animals, particularly of aged ewes. In New Zealand about one-third of the lamb livers for export are condemned, but in very few is this definitely due to hydatid. In wethers killed in their 2nd or 3rd year hydatid rarely exceeds 5% whereas in ewes the incidence may approach 100%. It is estimated that the value of livers condemned for this infection in New Zealand is annually about £200,000.

R.T.L.

(122d) This paper deals solely with the use from the air of copper salts as a top dressing for the improvement of copper-deficient peat land in New Zealand on which dairy cattle contract peat scours and lambs acquire enzootic ataxia. This abstract of Anderson & Cunningham's paper is given here as the use of aircraft for the distribution of copper salts on hill country or flat land which is unsuited for agricultural machinery may be applicable to the control of molluscan vectors of trematode infections of stock and particularly of liver fluke. The equipment consisted of metal hopper, valve and a specially designed simple venturi. A number of experimental mixtures to promote free running were tested. The best proved to be a mixture of commercial crushed bluestone with $\frac{1}{2}\%$ "light" magnesium carbonate. The distribution rate was 5 lb. per acre and the cost for 1,000 acres is estimated at £75 as compared with hand top-dressing at £82. 10. Interesting details are given on the effectiveness of this method of top-dressing and the suggestion is made that a successful approach might be made to the problem of top-dressing hill country with cobalt sulphate. The results already obtained indicate that considerable study is necessary before the technique could be applied to small farms.

R.T.L.

123—North American Veterinarian.

- a. ANON, 1946.—"The management of hookworm infection." 27 (9), 548.
- b. TURK, R. D., 1946.—"Tapeworms." [Questions and Replies.] 27 (9), 574.
- c. SHAW, J. N., 1946.—"Further trials with hexachloroethane as a treatment for liver fluke in Oregon cattle." 27 (10), 625-627.

(123b) Copper sulphate-nicotine sulphate solution prepared by adding 1 fluid oz. of 40% nicotine sulphate solution to 1 gallon of 1 $\frac{3}{4}\%$ copper sulphate is recommended by the Texas Experiment Station for the treatment of tapeworm in calves. The dosage is 1 c.c. per lb. of body weight up to 500 lb. and 0.25 c.c. per lb. for each lb. over 500.

R.T.L.

(123c) Although liver-fluke is prevalent in cattle in Oregon they do not produce clinical symptoms and the animals usually top the market. Hexachlorethane was only 50% effective in removing the parasites and is far less effective against this fluke in cattle than is carbon tetrachloride in sheep and goats. In a further series of 6 steers 3 were given 100 gm. of hexachlorethane each. When slaughtered the 3 controls were found to harbour 5, 18 and 35 flukes and the bile ducts showed marked thickenings and encrustations. The 3 treated animals were killed 13 days after dosing: their livers contained 0, 38 and 12 flukes. The control animals made better gains than those treated. It is thought that where cattle are crossed with zebus to make them more resistant to other diseases they are rendered more likely to show clinical symptoms from fluke infestation. The use of extremely large numbers of *Fasciola hepatica* cysts for artificial infection in cattle always failed to produce the clinical symptoms described from cattle in the Gulf States.

R.T.L.

124—Ohio Journal of Science.

- a. KNIES, P. T., 1946.—"The hazards of tropical diseases as a result of World War II." 46 (4), 219-222.

(124a) This summary of the hazards of tropical diseases supports the tentative optimistic conclusions of the Interdepartmental Quarantine Commission of U.S.A. The 1,200 cases of

schistosomiasis contracted mainly on Leyte were generally mild. Of the 2,000 cases diagnosed as filariasis very few showed microfilariae in the blood and none showed symptoms of elephantiasis. Neither onchocerciasis nor dracontiasis was reported. R.T.L.

125—Parasitology.

- a. REES, G., 1946.—“The anatomy of *Phyllobothrium dohrnii* (Oerley) from *Hexanchus griseus* (Gmelin).” 37 (3/4), 163–171.
- b. BATHAM, E. J., 1946.—“Testing arecoline hydrobromide as an anthelmintic for hydatid worms in dogs.” 37 (3/4), 185–191.
- c. SPRENT, J. F. A., 1946.—“Studies on the life-history of *Bunostomum phlebotomum* (Railliet, 1900), a hookworm parasite of cattle.” 37 (3/4), 192–201.
- d. SPENT, J. F. A., 1946.—“Some observations on the bionomics of *Bunostomum phlebotomum*, a hookworm of cattle.” 37 (3/4), 202–210.

(125a) Rees describes in great detail the gross and finer structure of *Phyllobothrium dohrnii*, a cestode from the intestine of *Hexanchus griseus*, a deep sea fish caught off the west coast of Ireland. The text is illustrated by some fine line drawings. P.A.C.

(125b) Experiments on 157 dogs show that arecoline hydrobromide exerts its anthelmintic action on tapeworms by relaxing the muscle fibres and by inducing purgation in the host. Doses given in water of $\frac{3}{8}$ grain per 10 lb. body weight removes 95% or more of the *Taenia echinococcus* present. Dosing given in meat is almost as efficient. Subcutaneous injection caused purgation but did not remove the worms. Infected dogs usually gave negative findings after 3 purging doses. Arecoline hydrobromide was found to be highly efficient also against *Taenia* and *Dipylidium*. It removed about 50% of *Toxocara* but had no significant action on hookworms. R.T.L.

(125c) Sprent has extended our knowledge of the life-history of *Bunostomum phlebotomum* which occurred in 55% of 250 yearling cattle slaughtered in Nigeria. Over 2,000 adult worms were sometimes found. Descriptions are given of the egg, first, second and third stage larvae. Under laboratory conditions the third stage was reached in 113 hours. Penetration of the skin was confirmed. Eggs appeared in the faeces 56 days after skin infection. Third stage larvae were recovered from the lungs. Fourth stage larvae occurred in the abomasum 10 days after skin penetration. These larvae have a buccal capsule with 4 cuticular lancets. The smallest adult recovered was just over 5 mm. in length and had a definitive buccal capsule with a dorsal cone, 2 ventral lancets and a pair of lateral lancets which apparently move into a ventral position as the parasite reaches maturity. R.T.L.

(125d) *Bunostomum phlebotomum* is held to be partly responsible for deaths in yearling cattle in Northern Nigeria. The environmental conditions affecting the pre-infective stages of this parasite are described. The larvae do not climb the grass. Penetration of the skin takes place in the rainy season only. The hookworm burden of nomadic cattle is greater in the dry than in the rainy months, reaching a maximum in February. Adequate treatment in December, in Nigeria, should suffice to keep the animals healthy during the following dry season. R.T.L.

126—Phytopathology.

- †a. CHITWOOD, B. G., 1946.—“Soil fumigation against the golden nematode.” 36 (8), 684.
- †b. CLAYTON, E. E. & GRAHAM, T. W., 1946.—“Tobacco resistant to root knot and nematode root rot.” 36 (8), 684.
- †c. MACHMER, J. H., 1946.—“Golden nematode on commercial potatoes.” 36 (8), 686.
- †d. McCUBBIN, W. A., 1946.—“Golden nematode as a quarantine problem.” 36 (8), 687.
- †e. STEINER, G., 1946.—“Distribution, host range, character, and significance of the golden nematode as a disease agent.” 36 (8), 688.
- f. ARK, P. & TOMPKINS, C. M., 1946.—“Leaf-nematode infestation of bird's-nest fern.” 36 (10), 892–893.

(126a) Chitwood gives the results of the fumigation with Shell ‘D-D’ of land infested with the nematode of potatoes, *Heterodera rostochiensis*. With hand application of the fumigant to plots surrounded by clean land at rates of 425, 850 and 1,700 lb. per acre, the fumigation

† Abstract of a paper presented at the 3rd Annual Meeting of the Potomac Division of the American Phytopathological Society.

efficacy was 0.999, 0.996 and 0.999 respectively. A similar test in which the experimental plots were surrounded by infested land gave a slightly lower rate of efficacy. D-D applied by machine to 2 half-acre subplots per treatment gave the following results: 452 lb.—0.998 and 0.994 efficacy; 631 lb.—0.974 and 0.983 efficacy; 858 lb.—0.928 and 0.986; 930 lb.—0.987 and 0.716 (second plot a failure, possibly due to mechanical defect); 1,213 lb.—0.991 and 0.973 efficacy. On the controls 15,255 females were observed, while on the treated plots there were 953, of which 693 were in one subplot. The total overall efficacy was 0.938, with odds of 99:1 that the treatments were better than 86% effective.

M.T.F.

(126b) A high degree of resistance to root-knot (due to *Heterodera marioni*) and nematode root rot (due to *Pratylenchus* sp.) has been shown by genotypes from the tobacco collection No. T.1.706 grown under severe field conditions and in widely scattered locations. After a cross with susceptible tobacco, and after first and second back crosses, full resistance was recovered. Back crossing has produced some lines which appear slightly more resistant to both diseases than the original selection.

M.T.F.

(126c) Machmer records the finding of large numbers of potato eelworm cysts on potato tubers prepared for shipment. A reduction of 86% can be obtained by washing and brushing, and of 90% by jet washing. Improved technique might increase the efficacy of jet washing.

D.F.

(126d) The distribution of *Heterodera rostochiensis* in U.S.A. is given, as shown by surveys of potato growing areas in 1944 (in 19 north-eastern States) and 1945 (in Long Island). Quarantine controls and plans to minimize its further spread are also referred to.

M.T.F.

(126e) Steiner gave an account of the distribution of *Heterodera rostochiensis* throughout the world, its early discovery, host range, life-history and effect on the potato. There are plans to eradicate it on Long Island.

M.T.F.

(126f) Ark & Tompkins give a brief account of leaf-blotch in bird's-nest fern (*Asplenium nidus*) caused by the eelworm *Aphelenchoides fragariae* [*A. olesistus*] which sometimes causes great damage to this kind of fern in the San Francisco Bay region of California. By means of a photograph they show the difference between the nematode infestation of the frond and that caused by *Phytophthora asplenii* which gives rise to bacterial leaf blight. Control has been effected by steam sterilization of potting compost, flats and flower pots.

T.G.

127—Plant Disease Reporter.

- a. MILLER, J. H., 1946.—“Notes on diseases of garden crops in Georgia in 1945.” 30 (2), 48–49.
- b. McCOLLOCH, L. P., FOSTER, H. H. & LUTZ, J. M., 1946.—“Observations on Mississippi tomato diseases during 1945.” 30 (3), 81–87.
- c. BLODGETT, E. C., 1946.—“The distribution of parasitic nematodes on economic plants in Idaho.” 30 (6), 182–190.
- d. NEWHALL, A. G., 1946.—“Greenhouse vegetable diseases of interest in New York.” 30 (6), 195–197.
- e. TOWNSEND, G. R., CASSELL, R. C., FELIX, E. L. & DESROSIERS, R., 1946.—“Plant disease survey in the Everglades and contiguous areas during the 1945–46 season.” 30 (7), 234–241.
- f. FENNE, S. B., LEFEBVRE, C. L., HENDERSON, R. G. & SMITH, T. J., 1946.—“Alfalfa and clover diseases in Virginia.” 30 (7), 242–243.
- g. JOHNSON, A. G. & LEUKEL, R. W., 1946.—“*Dilophospora alopecuri* on wheat in South Carolina.” 30 (9), 327.
- h. SMITH, P. G., 1946.—“Some vegetable diseases in the South Pacific.” 30 (10), 376–379.

(127a) Miller found the following garden crops affected by root-knot in Georgia in 1945: beets, carrots, turnips and Swiss chard, tomatoes and okra (both badly affected). Eggplant and pepper showed some galls but were not completely destroyed. Lima beans, both running and dwarf, though showing many knots were not much reduced. Among a number of weeds examined the only one found affected was *Acalypha ostryaefolia*.

T.G.

(127b) In this report covering the diseases affecting tomatoes in Mississippi during 1945, mention is made of the fact that root-knot caused by *Heterodera marioni* was not found to reach

severe proportions or be of economic importance where proper crop rotations with a resistant crop, such as corn, were maintained. T.G.

(127c) Blodgett gives short histories of the occurrence of some of the most important plant parasitic nematodes in Idaho, and in each case deals with the present position. He discusses the following: the stem eelworm, *Ditylenchus dipsaci*, as a pest of alfalfa and clover; the sugar-beet nematode, *Heterodera schachtii*, attacking sugar-beet; the root-knot nematode, *Heterodera marioni*, as a pest of a number of crops but particularly of potatoes; the potato rot nematode, *Ditylenchus destructor*, which is known to affect potato tubers on a few farms in the Aberdeen area of Idaho. T.G.

(127d) Newhall mentions that the control of the root-knot nematode in greenhouses in New York State is being effected by the use of volatile fumigants such as "Larvacide," "Iscobrome" and "Dowfume G." It is claimed that, as compared with steaming requiring 6 days, the soil can be injected with the fumigant in 4 hours and at a 75% reduction in cost. T.G.

(127e) A field of squash occurs on the east coast of Florida where there was a 100% infection of root-knot (*Heterodera marioni*) on the roots. This crop had followed one of okra which is a very susceptible host plant. The grower estimated a 35 to 40% reduction in the yield of squash due to root-knot infestation. T.G.

(127f) The occurrence of a severe infestation of root-knot (*Heterodera marioni*) on red clover followed cropping with tobacco for several years. T.G.

(127g) Johnson & Leukel record the first occurrence in the United States of the fungus *Dilophospora alopecuri* on wheat associated with the wheat gall nematode [*Anguillulina tritici*]. The latter was present to the extent of 21% amongst the wheat grains. T.G.

(127h) Smith reports some interesting observations on the occurrence of vegetable diseases on islands in the South Pacific in 1944 to 1945, when he was engaged in attempts to increase vegetable production for the armed forces. On Espiritu Santo and Bougainville he found tomatoes and water melons infested with root-knot (*Heterodera marioni*) on land which was freshly cleared jungle. T.G.

128—Post-Graduate Medical Journal.

- a. ANON, 1946.—"Casoni test. A review." 22 (249), 203-204.

129—Poultry Science.

- a. WEHR, E. E. & OLIVIER, L. G., 1946.—"Limitations of phenothiazine in the control of cecal worms and blackhead disease of turkeys." 25 (3), 199-203.
b. TODD, A. C., 1946.—"The nature of helminth infestations in chickens in East Tennessee." 25 (5), 424-432.

(129a) Wehr & Olivier have examined the efficiency of phenothiazine against *Heterakis gallinae* in turkeys and chickens which were ranging on land known to be contaminated with blackhead. It was fed in the mash in 1% and 2% concentration. It did not prevent the maturation of the worms but it did apparently cause them to be expelled soon after reaching maturity. By that time blackhead had been transferred to a new host. There was no significant difference in the incidence of blackhead between the group of birds fed phenothiazine and the controls. P.A.C.

(129b) Todd finds that 95% of 390 chickens examined by him in Tennessee are infected with helminths, adult birds carrying more worms than the young ones and having a wider variety of helminth parasites. 17 species are recorded as being present: 9 species of nematodes and 8 species of cestodes. Trematodes are apparently not represented. P.A.C.

130—Proceedings of the Helminthological Society of Washington.

- a. NAGATY, H. F. & EZZAT, M. A. E., 1946.—“On the identity of *Multiceps multiceps* (Leske, 1780), *M. gaigeri* Hall, 1916, and *M. serialis* (Gervais, 1845), with a review of these and similar forms in man and animals.” 13 (2), 33-44.
- b. HUNTER, III, G. W. & HARKEMA, R., 1946.—“Studies on filariasis. III. Potential mosquito vectors of *Wuchereria bancrofti*.” 13 (2), 44-49.
- c. DOUGHERTY, E. C., 1946.—“A brief survey of the genus *Dictyocaulus* Railliet and Henry, 1907 (Nematoda: Trichostrongylidae).” 13 (2), 49-54.
- d. CHITWOOD, B. G. & BUHRER, E. M., 1946.—“Further studies on the life history of the golden nematode of potatoes (*Heterodera rostochiensis* Wollenweber), season 1945.” 13 (2), 54-56.

(130a) A detailed examination of adult and larval material, and some experimental feedings, have convinced Nagaty & Ezzat that *Multiceps gaigeri* is a synonym of *M. multiceps*. The alleged differences in the size and shape of the hooks are not convincing. They believe, however, that *M. serialis* is a distinct species and they give a description of some material obtained from a rabbit.

P.A.C.

(130b) Three species of mosquitoes indigenous in U.S.A., viz., *Aedes aegypti*, *Culex pipiens* and *C. restuans* have been experimentally infected with *Wuchereria bancrofti* by the authors, bringing the total number of potential vectors in U.S.A. to 11.

R.T.L.

(130c) Dougherty summarizes views of previous workers on the species of the genus *Dictyocaulus* and concludes that there are 4 acceptable species, viz., *D. filaria*, *D. viviparus*, *D. magnus* and *D. arnfieldi* and gives the synonymy of each.

R.T.L.

(130d) Chitwood & Buhrer studied 2 aspects of the relationship between the potato root nematode and its host in Long Island during 1945. Tubers of Green Mountain were set on March 30, and at 8 intervals of one to two weeks, from April 30 to July 25, 8 plants from each of 5 plots of infected land were dug, and the numbers and stage of development of the nematode were observed. The weekly mean soil temperature was also noted. At 51 to 52°F. little nematode invasion or development was recorded but at 60 to 61°F. there was mass invasion of the roots. Observations were also made on the effect of the parasites on the development of the host. Weights of tops, roots and tubers of plants growing on infected land and on plots treated with D-D, in which 94% of the parasites had been killed, were taken at intervals from May 7 to August 13. As compared with plants from the D-D plots, those from infected land showed (i) stunting of tops after May 21, (ii) increase in dry weight of roots at the end of May, followed after mid-June by a decline in both series of plots, (iii) a slower rate of increase in tuber weight from the beginning, becoming much slower in June. As compared with the 1944 season there was not the same early suppression of root growth in 1945. This is attributed to the early occurrence in 1945 of soil temperatures of 51 to 52°F. for 4 weeks when the potato roots could establish themselves unhindered by eelworm invasion, whereas in 1944 the temperature jumped to 59°F. when root growth was starting, and at this temperature the nematodes were actively invading.

M.T.F.

131—Proceedings of the Society for Experimental Biology and Medicine.

- a. PORTWOOD, L. M. & SANDERS, E., 1946.—“Electrophoretic and allergenic analyses of fractions of larvae of *Trichinella spiralis*.” 62 (2), 165-169.
- b. HERNÁNDEZ-MORALES, F., OLIVER-GONZÁLEZ, J. & PRATT, C. K., 1946.—“Treatment of Schistosomiasis mansoni with neostibosan.” 63 (1), 218-219.

(131a) Portwood & Sanders compare the electrophoretic and allergenic properties of acid-soluble and of heat-treated fractions of *Trichinella spiralis* with those of a saline extract. All fractions can be resolved into 3 electrophoretic components plus a heterogeneous mass. Both acid and heat treatments remove this mass. Saline and acid-soluble fractions used for an intradermal test produced the same sized wheal but the heat-treated fraction caused a rather smaller reaction.

P.A.C.

(131b) Twelve patients with *Schistosoma mansoni* in their stools were treated, during a 2-week period in hospital, with neostibosan. 8 out of 11 relapsed 3 to 4 months later while 3 were negative throughout a period of 11 months. That the drug had a parasitotropic effect was shown by the reduction in the egg counts of 6 patients 11 months after treatment.

R.T.L.

132—Queensland Agricultural Journal.

- a. ROBERTS, F. H. S., 1946.—“Nodule worm disease of sheep.” 62 (5), 301–304.
- b. ROBERTS, F. H. S., 1946.—“The use of phenothiazine for the treatment of worms in cattle.” 62 (6), 371–375.
- c. CANNON, R. C., 1946.—“Control of nematodes in tobacco seed-beds.” 63 (1), 20–21.

(132a) In Australia oesophagostomiasis becomes serious only in those areas with a summer rainfall and with 20 inches or over annually. In Queensland it is very prevalent in the Emerald-Clermont district and the Darling Downs. Roberts gives a popular account of the parasite, dealing with the life-history, pathological effects, treatment and control. He recommends that in Queensland phenothiazine should be given as a drench in April, June and August. R.T.L.

(132b) In Queensland serious losses from worm infestations both in dairy and beef cattle are frequent especially in the coastal and subcoastal areas. Calves and young animals up to 2 years of age are most affected, particularly between autumn and early spring. Roberts gives a popular account of the management and treatment of infected young stock with phenothiazine. R.T.L.

(132c) Cannon has tested several methods of treating tobacco seed-beds to control the root-knot nematode. He finds sterilization by heat to be more satisfactory than [unspecified] chemical treatments. The two heat treatments tried, namely, steam sterilization and the burning of termite nest material on the soil, were equally effective. Of the seedlings grown in heat-treated soil, in the early stages of growth 4% were galled as compared with 23% in untreated soil. The infection increased to 13% and 38% respectively after a few weeks. Practical details of the burning method are given. It is claimed that a sufficient degree of control is obtained to make the treatment worth the labour involved. M.T.F.

133—Report. Department of Scientific and Industrial Research, New Zealand.

- a. TETLEY, J. H., 1946.—“Research on the roundworms of sheep.” 20th (1945–46), p. 73.

(133a) Tetley's research programme is designed to contribute towards an understanding of the factors which determine the epidemic occurrence of *Haemonchus contortus* in sheep in New Zealand. So far it has been shown that the problem is a complicated one and that the nutritional state and other factors play a part. R.T.L.

134—Revista Brasileira de Biologia.

- a. FREITAS, J. F. TEIXEIRA DE, 1946.—“*Capillaria fluminensis* n.sp., parasita de marsupial (Nematoda, Trichuroidea).” 6 (1), 13–14.
- b. FREITAS, J. F. TEIXEIRA DE & LENT, H., 1946.—“Infestação de apaiaris *Astronotus ocellatus* (Agassiz) pelo nematódeo *Goezia spinulosa* (Diesing, 1839).” 6 (2), 215–222.
- c. FREITAS, J. F. TEIXEIRA DE & LENT, H., 1946.—“*Porrocaecum sulcatum* (Rudolphi, 1819), (Nematoda, Ascaroidea).” 6 (2), 235–238.

(134a) Freitas describes *Capillaria fluminensis* n.sp., a parasite of the frontal sinus of *Didelphis marsupialis aurita* in Brazil. Though rather similar to *C. eberthi* and *C. longicauda* it can be distinguished by the size of the bursa of the male, the structure of the spicules, the position of the vulva, and the general appearance of the bacillary bands and of the eggs. P.A.C.

(134b) Freitas & Lent redescribe *Goezia spinulosa* which they found in *Astronotus ocellatus* in Brazil. The infective larva occurs in species of *Diaptomus* where it lies free in the body cavity. P.A.C.

(134c) *Porrocaecum sulcatum* has been found by Freitas & Lent in the stomach of *Chelone mydas*, in Rio de Janeiro, where it may cause considerable inflammatory lesions. Their description amplifies that of Rudolphi. P.A.C.

135—Revista Ibérica de Parasitología.

- a. CALATAYUD, A. R., 1946.—“Contribución al estudio de la helmintología humana.” 6 (1), 75–88.
- b. RANQUINI, J. H., 1946.—“Formación del huevo en *Dicrocoelium dendriticum* Rudolphi, con el estudio citológico de los procesos madurativos y de la fecundación.” 6 (1), 89–110.

(135a) In this lecture on gut pathology brief descriptions are given of *Taenia solium*, *T. saginata* and *Hymenolepis nana*. *Oxyuris* and *Ascaris lumbricoides* are mentioned with short remarks on life-history and treatment. P.A.C.

(135b) The egg of *Dicrocoelium dendriticum* is fertilized in the first part of the oviduct but the spermatozoon remains inactive for a time while the reduction division occurs. After the polar body has been expelled fusion occurs resulting in a zygote with 12 chromosomes. Segmentation then proceeds: there are 32 cells in the blastomere. P.A.C.

136—Revista del Instituto de Salubridad y Enfermedades Tropicales. México.

- a. RODRÍGUEZ SOLÍS, L., 1946.—“Cuatro casos de parasitación múltiple por tenias.” 7 (1), 17–18. [English summary p.18.]
- b. BELTRÁN, E., LARENAS M., R. & GUERRA, F., 1946.—“La acción de la rotenona sobre la infección intestinal de protozoarios y helmintos en la rata.” 7 (1), 53–56.
- c. GUERRA, F., 1946.—“La acción de la rotenona y de la mexicaína en la triquinosis experimental de la rata.” 7 (1), 57–61.

(136a) Rodríguez Solís describes 4 cases of simultaneous infestation with *Taenia solium* and *T. saginata*, parasites which are usually found alone. P.A.C.

(136b) Rats (*Mus norvegicus albus*), carrying *Hymenolepis* and various protozoan parasites, were treated with crystallized rotenona in doses varying from 15 mg. to 70 mg. per 100 gm. body weight. It proved to be a useful vermifuge. P.A.C.

(136c) Guerra has investigated the use of 2 drugs against infestation with *Trichinella spiralis*. A proteolytic extract of *Pileus mexicanus* administered immediately after the intake of infested meat had no good effect in reducing the resulting infestation in rats. Rotenona, an extract of the plant genus *Lonchocarpus*, administered under similar conditions as the previous extract, reduced the resulting infestation slightly. P.A.C.

137—Revista de Sanidad e Higiene Pública.

- a. RICO-AVELLO, C. & ANDRES, A. A., 1946.—“Encuesta epidemiológica sobre bilharziosis vesical en la fracción de Telata de Raisana (Jolot).” 20 (2), 111–140.

(137a) In Telata de Raisana vesical bilharziasis was found in 13.8% of the population, *Bulinus* being the main vector. The degree of infestation indicates that it is an important public health problem. There was a high eosinophilia among infested patients. The authors have considered some of the epidemiological factors involved. P.A.C.

138—Schweizer Archiv für Tierheilkunde.

- a. MESSERLI, W., 1946.—“Vorkommen und Bekämpfung von Strongyliden und Coccidien im Magendarmkanal des Rindes.” 88 (5), 225–243.
- b. BOUVIER, G., 1946.—“Observations sur les maladies du gibier, de quelques animaux sauvages et des poissons (1942–1945).” 88 (5), 268–274.

(138a) Messerli reports on the incidence of strongylid eggs and coccidial oocysts in the faeces of 82 cattle, the clinical symptoms observed, and control measures with phenothiazine. Strongylid eggs were found in 11 of 20 cattle over 3 years and in 49 of 62 under that age. The main symptom was diarrhoea. The recommended dose of phenothiazine is 10 to 20 gm. daily on each of 4 to 8 successive days, according to age. B.G.P.

(138b) Bouvier supplements earlier reports by B. Galli-Valerio and Bornand on the diseases of various animals examined at the Veterinary Institute in Lausanne. Nearly all the chamois (*Rupicapra rupicapra*) were more or less massively infected with *Protostrongylus*

rufescens, 6 out of 11 died of verminous bronchopneumonia. Bronchopneumonia due to *Dictyocaulus viviparus* is also common but not serious. In the hare *Passalurus ambiguus* and *Trichuris leporis* are rare but *Dicrocoelium dendriticum* is very common. In old foxes *Mesocystoides lineatus* is a cause of death and *Taenia pisiformis* is numerous. *Cotylurus cornutus*, *Catatropis verrucosa* and *Echinorhynchus polymorphus* were found in *Cygnus olor*. *Syngamus trachea* occurred in 4 *Phasianus colchicus*.
R.T.L.

139—Science.

- a. KNIGHT, J. B. & BLACKWELDER, R. E., 1946.—“Misuse of the Linnaean system of nomenclature.” [Correspondence.] 104 (2699), 277–278.

(139a) Knight & Blackwelder point out that “page precedence has no rule at all for determining priority and an extremely minor role for any other purpose.” It is merely a criterion between simultaneous names and for the selection of the type of a genus to be employed when other things are equal. At best it is only a recommendation of procedure not a rule of nomenclature. Priority is a matter of date of publication. *Cercaria* and *Proterometra* were not new names simultaneously proposed, for *Cercaria* was made by Mueller in 1773 and *Proterometra* by Horsfall in 1933.
R.T.L.

140—Scientific Agriculture.

- a. BAKER, A. D., 1946.—“The potato-rot nematode, *Ditylenchus destructor* Thorne, 1945, attacking potatoes in Prince Edward Island.” 26 (3), 138–139.

(140a) Baker reports that the potato rot nematode *Ditylenchus destructor* Thorne, 1945 has been found causing disease to potato tubers of the variety Green Mountain in one field, close to Charlottetown, Prince Edward Island. The specific identity of the parasite was confirmed by Dr. Gerald Thorne.
T.G.

141—Scientific Monthly. New York.

- a. HARWOOD, P. D., 1946.—“Research on phenothiazine as an anthelmintic.” 62 (1), 32–42.

(141a) Harwood discourses on the theme of phenothiazine research, with special emphasis on the part played by the U.S. Bureau of Animal Industry, and uses his discourse to show that it is impossible to separate practical from fundamental research. Phenothiazine research is here used merely as an example, and the paper does not set out to give facts or references. B.G.P.

142—Semaine des Hôpitaux de Paris.

- a. LIGER & SCHNEYDER, R., 1946.—“Kystes hydatiques chez les indigènes Nord-Africains.” 22 (27), 1280–1284.

(142a) Of 4 cases of hydatid of the lung seen at Amiens in North African tirailleurs, one ruptured into the bronchi and the remainder were only detected during routine radiography. In the latter, Weinberg's reaction was feebly positive in 2 and negative in one. Eosinophilia occurred in 2 and the Casoni reaction was positive in one only.
R.T.L.

143—Transactions of the American Microscopical Society.

- a. CROZIER, B. U., 1946.—“A new taeniid cestode, *Cladotaenia banghami*, from a bald eagle.” 65 (3), 222–227.
b. TODD, A. C., 1946.—“On the genus *Capillaria* Zeder, 1800, in Tennessee chickens.” 65 (3), 228–236.

(143a) Crozier describes *Cladotaenia banghami* n.sp. from *Haliaeetus leucocephalus* in Ohio. It can be recognized by the presence of 36 hooks on the rostellum, and of 105 to 111 testes in paired longitudinal fields united behind the vitellaria. The uterus produces 11 to 19 irregular diverticula on each side of a central section which never quite extends as far as the genital pore.
P.A.C.

(143b) *Capillaria* were found in 35% of a group of 390 chickens examined in Tennessee. *C. annulata* was recovered from the crop while *C. caudinflata*, *C. columbae*, *C. retusa* and *C. bursata* were found in the intestine. This is the first record of *C. bursata* in the United States. P.A.C.

144—Transactions of the Kansas Academy of Science.

a. LOEWEN, S. L., 1946.—“A new host record for the cestode *Bothridium pithonis* de Blainville 1828.” (1945-1946), 48 (1), 107-108.

(144a) *Bothridium pithonis* is recorded from the king cobra, *Naja hannah*, for the first time. This new host is thought to have come from Malaya. R.T.L.

145—Tropical Diseases Bulletin.

a. BUCKLEY, J. J. C., 1946.—“Control of schistosomiasis.” 43 (8), 693-696.

(145a) Buckley reviews recent literature relating to methods of controlling schistosomiasis by prevention or treatment. Preventive methods are classified under 3 main headings: (i) protection of snail habitats from infection; (ii) destruction of snail intermediaries; (iii) avoidance of cercarial infection. J.J.C.B.

146—Växtskyddsnötiser.

a. HOLMBERG, C., 1946.—“Potatiskräfta och Potatisål i Sverige år 1945.” No. 2, p. 28.

(146a) Holmberg reports that, in 1945, the potato root eelworm, *Heterodera rostochiensis*, was found in Sweden on about 400 farms located in 32 parishes of 9 counties. In 11 of the parishes the parasite was recorded for the first time. The most striking spread was in Malmöhus and Kristianstad and to the west of Blekinge. Certain new heavy attacks were noted, one involving 150 acres of potatoes, and the Plant Protection Service points out the importance of growing potatoes in such fields not more than once in 3 years. T.G.

147—Veterinary Journal.

a. SPRENT, J. F. A., 1946.—“Critical anthelmintic tests in cattle.” 102 (4), 83-87.

(147a) From tests on single cases of helminth infection of cattle in Nigeria, Sprent concludes that phenothiazine is the most satisfactory remedy for haemonchosis and oesophagostomiasis in the zebu. He recommends a dose of 50 gm. for an animal weighing 120 Kg. A table is given showing the number of worms passed in the faeces up to the 6th day after various treatments and the numbers found at post-mortem. R.T.L.

148—Veterinary Medicine.

a. ANON, 1946.—“Livestock parasites being conquered by research.” 41 (4), 123-124.

b. ANON, 1946.—“Sodium fluoride effective against swine roundworms.” 41 (5), 160.

(148a) This annotation summarizes Schwartz' contribution to a discussion on “War-time development in controlling parasites of livestock” at the 49th annual meeting of the U.S. Livestock Sanitary Association, held in December 1945. Common stomach worms and nodular worms of sheep can be controlled effectively by a mixture of phenothiazine and salt. For liver-fluke in cattle hexachlorethane and bentonite, given together as a drench, is recommended. 1 lb. of hexachlorethane, 1.5 oz. of bentonite and 0.25 oz. of flour are added to 25 oz. of water. Of this mixture 6.5 oz. is the dose for cattle and 3 oz. for calves. For ascarids in pigs 10 parts by weight of sodium fluoride is given in 90 parts of feed. [No quantities are cited: the drug intake is apparently self-limiting owing to nausea. See following abstract No. 148b.] R.T.L.

(148b) The U.S. Department of Agriculture finds that sodium fluoride is the most efficient drug for the treatment of swine ascaridiasis. It eliminates 95% of the worms whereas other known treatments are only about 50% to 75% effective. The best method of administration is to feed pigs for one day on dry ground feed containing 1% by weight of the drug. The intake is self-limiting as vomiting tends to follow overeating. The pigs should be treated in groups not greater than 10 and as an adjunct of preventive and control measures such as the McLean County System. R.T.L.

149—Veterinary Record.

- a. BLAKEMORE, F. & McDOUGALL, E. I., 1946.—“Flock idiosyncrasy to carbon tetrachloride.” 58 (36), 400.
- b. MICHAEL, D. T., 1946.—“Some clinical aspects of cobalt deficiency in cattle.” 58 (39), 426–428.
- c. GUNNING, O. V., 1946.—“An outbreak of parasitic bronchitis in calves associated with an infection of the lungs with an organism resembling *Bacillus actinoides*.” 58 (41), 447.
- d. ANON, 1946.—“Control of canine helminthiasis by anthelmintics.” [Questions and Answers.] 58 (42), 457.
- e. TAYLOR, E. L., 1946.—“Parasitological considerations.” 58 (43), 467–468.
- f. CROSFIELD, P., 1946.—“Strongylosis as an unsoundness.” [Correspondence.] 58 (44), 484.

(149a) Idiosyncrasy to carbon tetrachloride is illustrated by a flock of 220 Suffolk ewes, unthrifty due to parasitic gastro-enteritis, in which 26 died and the remainder were ill. Those in the best condition were the most severely affected. Post-mortem of 2 ewes showed excessive necrosis of the liver. The serum calcium levels were within the normal range. R.T.L.

(149b) Cobalt deficiency is sometimes associated with secondary anaemia due to parasitic gastro-enteritis and parasitic bronchitis. The lag phase which occurs in young stock responding rather poorly to anthelmintic treatment is removed by cobalt administration. In parasitic bronchitis better results are obtained by using phenothiazine and cobalt than by the administration of phenothiazine alone. Cattle may be treated at grass and left on infected pastures. R.T.L.

(149c) Gunning suggests that heavy infestations of calves with *Dictyocaulus viviparus* merely open up a channel for the entrance of micro-organisms which are responsible for pneumonic symptoms and that too much attention is given to the parasite and too little to these secondary invaders. An outbreak in 57 calves is cited in which dramatic results followed the administration of soluthiazole over a considerable period. R.T.L.

(149e) Taylor points out that in the understanding of group diseases the research field of helminthology offers certain advantages that are not fully appreciated by workers in epidemiology and in immunology. R.T.L.

(149f) Crosfield does not think that any horse showing clinical symptoms of infection with strongyles should be certified as sound without a microscopical examination of the faeces. R.T.L.

150—Zoologicheskii Zhurnal.

- a. FEDYUSHIN, A. V., 1946.—“A new form of seasonal adaptation in the cestodes of sedentary birds.” 25 (2), 101–105. [In Russian: English summary p. 105.]
- b. PAVLOVSKY, E. N., 1946.—“Conditions and factors affecting the formation of the host organism of a parasite in the process of evolution. (Sketches of evolutionary parasitology, I).” 25 (4), 289–304. [In Russian: English summary pp. 303–304.]

(150a) Fedyushin continues his observations on the destrobilization of cestodes during the winter months. It is not universal but is limited to those birds which live under very hard conditions in the north. It occurs in *Raillietina urogalli* and *Rhabdometra tomica*, parasites of the Tetraonidae but not in *Rhabdometra nigropunctata*, typically a parasite of the partridge occurring further south. P.A.C.

(150b) The plerocercoids of *Diphyllbothrium latum*, when introduced into the stomach, migrate into the tissues of the lamprey, frog, *Bombina orientalis*, *Lacerta viridis*, *L. agilis*, *Anguis fragilis*, *Gymnodactylus caspius*, *Vipera berus* and *V. renardi*, although none of these animals is a normal host of *D. latum*. Pavlovsky concludes that they are potential hosts and the absence of natural infestations is dependent on their inability to eat infected fishes. In other cases (e.g. terrapin), migration is inhibited by the solidity of the stomach wall while in *Gymnodactylus* migration occurs easily unless the temperature reaches 37°C. He recognizes 3 conditions as essential to the creation of a host for a virulent parasite: (i) factors which predispose to invasion; its structure, function and biochemical properties; (ii) factors which determine the possibility of penetration; (iii) factors favouring survival in the host. R.T.L.